VOL. 93. NO. 9 SEPTEMBER, 1937

41.8
V643

LIBRARY
RECEIVED
OCT 15 1937
U.S. Department of Agriculture

THE VETERINARY JOURNAL

A MONTHLY REVIEW OF VETERINARY SCIENCE

Est. 1875

EDITOR:

PROF. SIR FREDERICK HOBDAY, C.M.G., F.R.C.V.S., F.R.S.E.

DR. MED. VET. h.c. (ZURICH),
HONORARY VETERINARY SURGEON TO HIS MAJESTY THE KING,
OFFICIER DU MÉRITE AGRICOLE (FRANCE),
CAVALIERE DEI SS. MAURIZIO E LAZZARO (ITALY),
HONORARY MEMBER OF THE AMERICAN VETERINARY ASSOCIATION,
PRINCIPAL AND DEAN OF THE ROYAL VETERINARY COLLEGE, LONDON.

SUB-EDITOR:

GLADSTONE MAYALL, M.R.C.V.S.

with the collaboration of

RICHARD HUDSON, F.R.C.V.S.

PROF. J. McCUNN, M.R.C.V.S., M.R.C.S., L.R.C.P.

LT.-COL. T. DUNLOP YOUNG, O.B.E., D.V.S.M., M.R.C.V.S

PRICE: Single Copies 2s. (2s. 2d. post free); Annual Subscription 21s.

LONDON: BAILLIÈRE, TINDALL & COX
EST. 1826
7 & 8, HENRIETTA ST., COVENT GARDEN, W.C. 2.

ED IN GREAT BRITAIN

ENTERED AS SECOND-CLASS MATTER IN THE U.S. POST OFFICE

XUM

'NEMA'
Worm Capsules
(P., D. & Co.)

TETRACHLOR-ETHYLENE is an effective anthelmintic for the removal of roundworms from dogs and silver foxes, roundworms from pigs and poultry, and stomach worms from sheep and goats. Practical trial has shown that a single administration in proper dosage will remove from 95 to 100 per cent of these intestinal parasites.

The effectiveness of tetrachlor-ethylene as an anthelmintic for veterinary purposes was first demonstrated by Hall and Shillinger of the U.S.A. Department of Agriculture and has been amply confirmed by several years' experience, both in the laboratory and in general practice.

"Nema" Worm Capsules (P., D. & Co.) contain chemically pure tetrachlor-ethylene, and are tinted with a harmless dye to render them distinctive. The capsules are supplied in various sizes, to enable the dose to be graded according to the weight of the animal treated, as follows:—

No. 188 contain 0·2 c.c. and are suitable for puppies, toy dogs, cats and fox-cubs.

No. 191 contain 0·5 c.c. and are suitable for small pigs, half-grown silver foxes, young chickens and young turkeys.

No. 187 contain 1 c.c. and are suitable for small pigs, small dogs and adult fowls.

No. 189 contain 2·5 c.c. and are suitable for pigs and lambs of 50 lb. weight, and medium-sized dogs.

No. 190 contain 5 c.c. and are suitable for pigs and sheep over 150 lb. weight, and for large-sized dogs.

Full particulars will be furnished on request.

PARKE, DAVIS & COMPANY

50, Beak Street, London, W.1

Laboratories: Hounslow, Middlesex *Inc. U.S.A., Liability Ltd.*

XUM

XUM

VACCINES for SMALL ANIMALS

Prepared by

THE VETERINARY RESEARCH LABORATORIES
LONDON

PYOGENIC VACCINE (Canine)

For the Prevention and Treatment of Post-Operative Wound Infections, Abscesses, Pyæmic Dermatitis, Follicular Mange and Interdigital Cysts.

PUERPERAL VACCINE (Canine)

For the Prevention of Puerperal Sepsis and Abortion in the Bitch, and Navel Ill (Omphalitis) and Joint Ill (Pyæmic Arthritis) in Puppies.

CATARRHAL VACCINE (Canine)

For the Prevention and Treatment of Bacterial Infections of the Respiratory and Gastro-Intestinal Systems which arise primarily, or in association with, Infection by the Distemper Virus.

FELINE CATARRH VACCINE

For the Prevention and Treatment of Bacterial Infections of the Respiratory and Gastro-Intestinal Systems which arise primarily, or in association with, the Virus of Feline Distemper or Show Fever.

Sole Distributors :

WILLOWS, FRANCIS, BUTLER & THOMPSON, LTD.
73, 75 & 89a, SHACKLEWELL LANE,
LONDON, E.8

Wire
FORTY, HACK. LONDON.

Phone
CLISSOLD 6361 (Four lines)

The Veterinary Journal.

SEPTEMBER, 1937.

CONTENTS.

	PAGE
EDITORIAL—	
Veterinary Fees—A Point of Interest ...	315
Exposure of Meat in Shops ...	316
GENERAL ARTICLES—	
Cattle Tuberculosis in Canada (Part II) By Geoffrey Brook, D.Sc., F.R.C.V.S. ...	317
Dairy Farming. By Wm. Tweed, M.R.C.V.S., D.V.S.M. ...	330
Bilharzia Disease in the Union of South Africa. By F. Gordon Cawston, M.D. Cantab. ...	334
Maize. By Edward Morgan, F.R.C.V.S., D.V.H. ...	336
CLINICAL ARTICLES—	
A Coin as a Birthmark Indicator. By C. F. Shawcross, M.R.C.V.S. ...	338
The Use of Cod-liver Oil for Fistulous Withers. By J. W. Hall Masheter, M.R.C.V.S. ...	339
Purpura Hæmorrhagica. By F. L. Gooch, F.R.C.V.S. ...	340
Parasitic Bronchitis—Husk or Hoose. By Richard Hudson, F.R.C.V.S. ...	340
A Coincidence—or What ? By F. L. Gooch, F.R.C.V.S. ...	342
Swine Erysipelas in a Pregnant Sow. By P. Wait ...	342
Interstitial Nephritis. By S. M. Woodward, M.R.C.V.S. ...	343
A Treatment for Swallowed Needles. By V. Berwyn Jones, M.R.C.V.S. ...	344
REVIEWS ...	344
CORRESPONDENCE ...	345
OBITUARY ...	348
NEWS ...	348
PLATES—	
Cattle Tuberculosis in Canada. (*Article by* Geoffrey Brook, D.Sc., F.R.C.V.S.)	

XUM

THE
VETERINARY JOURNAL

Editor:
PROF. SIR FREDERICK HOBDAY, C.M.G., F.R.C.V.S., F.R.S.E.
PRINCIPAL AND DEAN OF THE ROYAL VETERINARY COLLEGE, LONDON

Sub-Editor:
GLADSTONE MAYALL, M.R.C.V.S.

in collaboration with

RICHARD HUDSON
Retford

PROFESSOR J. McCUNN
Professor of Anatomy, Royal Veterinary College

LIEUTENANT-COLONEL T. DUNLOP YOUNG
Veterinary Adviser to various Overseas Governments; late Chief Veterinary Officer to the Corporation of the City of London

SEPTEMBER, 1937

Editorial

VETERINARY FEES—A POINT OF INTEREST.

ON a later page we publish in full a press report of a claim which was recently made in a county court, and successfully contested by a veterinary practitioner, for the recovery of fees incurred during the treatment of a patient. The amount was sufficiently large (£59 6*s.* 6*d.*) to be of importance, especially as the judgment, which was given in favour of our colleague, carried costs with it. Briefly, the amount included £28 11*s.* 6*d.* (professional treatment), £30 5*s.* for board, and an amount of 10*s.* for railway fare.

The case was one of very troublesome mange which recurred on several occasions, but eventually was cured, and it was on the dog's being returned to its owner and the account being received that the argument as to responsibility arose. The chief point of interest was that the account was rendered on the completion of the patient's cure and not monthly or quarterly during its progress.

The finding of the judge on this point is of particular interest. His Honour stated that it would be better, in all cases where treatment is being given to an animal, for accounts to be rendered quarterly or half-yearly.

With this we are sure that all experienced older practitioners will agree that it is very unwise to allow a large debt to accumulate without informing the client that expenses are mounting up.

EXPOSURE OF MEAT IN SHOPS.

In our correspondence this month we publish a letter drawing attention to a matter which can, unfortunately, be seen any day in almost every town in England —the exposure to flies and other winged insects, and to the dust of the streets, of joints of meat intended for human food. Not only exposure in this way, but handled and fingered about with the unwashed hands of the prospective customer without remonstrance. Such things are not possible in the meat shops of Holland, Germany, Denmark, Sweden, Norway and others of our Continental neighbours, whose meat and fish shops are artificially kept cool and shaded and their contents protected by law from being unnecessarily handled. Our correspondent writes that after experience of the methods which were enforced by law in New Zealand, he is amazed at " the manner in which meat is exposed for sale and the astonishing way that any person can handle the meat in choosing a joint." His surprise, too, was great to find that in 1937 we in England were so far behind the times in that " a butcher is allowed to have his private slaughter-house in which to kill his beasts, *and that the meat, if passed at all, is passed by a sanitary inspector, and not a veterinary surgeon.*"

Reform in our system of meat inspection is long overdue, although a commencement is at last being made with the erection of three Central Abattoirs under Mr. Morrison's Livestock Industries Bill. These will inevitably be the precursors of many more which must be placed under either Government or Municipal control with veterinary inspectors in charge of all technical points, and with veterinary examination made before, as well as after, slaughter.

General Articles

CATTLE TUBERCULOSIS IN CANADA.

By GEOFFREY BROOK, D.Sc., F.R.C.V.S.

District Veterinary Officer, Staffordshire County Council.

(Concluded from our last issue)

PART II.

IV.—Avian Tuberculosis (Tuberculosis in Domestic Poultry and Wild Birds).

(A) *Incidence of Tuberculosis in Poultry.*—The disease exists in all parts of Canada. The following evidence has been collected :

(1) *Packing Houses* with Federal veterinary inspection receive dead poultry with the viscera intact. The birds come from all parts of Canada, are of various ages, and emanate from specialist and non-specialist farms. About 400,000 birds are examined annually, the overseas incidence being recorded by the veterinary authorities.

(2) *The Health of Animals Research Laboratory* had occasion to test all poultry on Prince Edward Island in connection with the skin-tuberculosis problem. Tuberculosis was detected throughout the island (unpublished work kindly communicated by Drs. Watson and Mitchell).

(3) *Typing of the bacilli in swine tuberculosis* has shown avian infection to be the chief cause (*see* " Tuberculosis in Swine ").

(B) *Tuberculosis in Wild Birds.*—Tuberculosis in the common crow (*Corvus brachyronchus brachyronchus*) has been reported by Mitchell, who examined about 600 crows, mainly from Western Ontario. Tuberculosis was detected in 6–8 per cent. The bacilli isolated were of an atypical avian type. The same worker transmitted a " crow " strain experimentally to the cow (*see* pp. 319-320).

(C) *Control.*—No official control is exercised over tuberculosis in poultry. The various extension services engage in propaganda work, but whole-time veterinarians are not engaged in these services (*see* Appendix 1). The veterinary field staff disseminate information and advice.

(D) *Avian Tuberculosis* in relation to disease and tuberculin hypersensitiveness in cattle is discussed elsewhere.

V.—Tuberculosis in Swine.

(A) *Incidence.*—The incidence, which has been recorded by the Chief Veterinary Officer of the Meat and Canned Foods Division, rose steadily from 1910 to 1934, since when a definite decrease has been observed, presumably related to the control of the infection in cattle.

XUM

(B) *Type of Infection.*—Tuberculosis in slaughtered swine has decreased in Canada by about 20 per cent. in the last two years, still remaining higher than it was in 1920. Tuberculosis in slaughtered cattle, on the other hand, has dropped by over 50 per cent. since 1924. This suggests that much swine tuberculosis is not bovine in type, a supposition which has received support from the work of Mitchell, Walker and Humphreys (14, p. 43). They examined forty specimens of tuberculosis in swine from a restricted area in the west, and fifty-six from one in the east, of Canada. It was possible to isolate bacilli from nine western and twenty-eight eastern cases ; in all instances bacilli were of the avian type.

(C) *Control.*—No official scheme of control is in operation.

VI.—Setbacks in the Tuberculosis Schemes. ("Breaks" in Controlled Herds.)

(A) *In general* it may be accepted that setbacks are neither numerous nor serious. The following area figures (2) illustrate this and figures for the Dominion as a whole confirm it.

Area.	Year.	Total Cattle.	Percentage reactors.	Test.
New Brunswick (County of Charlotte)... ...	1931	7,299	0.9	1st
	1934	9,249	0.24	2nd
Quebec (County of Brome)	1928	27,729	25.4	1st
	1929	23,270	0.7	2nd
	1932	28,539	0.6	3rd.
Ontario (County of Stormont)	1930	34,336	10.4	1st
	1932	34,003	0.77	2nd
	1933	32,818	0.73	3rd

Through the courtesy of Dr. Moynihan, of Toronto, we were able to abstract and classify the records of all controlled herds in the Niagara peninsula. The records were compiled in connection with a study of the significance of clinical examination in association with tuberculin testing.* They suffice to prove that in this comparatively heavily-infected area the great majority of herds were dealt with satisfactorily by tuberculin testing alone, the percentage of setbacks being encouragingly small.

As in all other countries engaged in tuberculin testing, setbacks occur in individual herds. When this happens a questionnaire is submitted to the farmer and no compensation is paid for slaughtered reactors until it is shown that the breakdown is not the result of his negligence. The information that has thus been collected is considerable, but has not been made the subject of special study —so far as we are aware—as is the case in New York State. Thus we are only able to discuss setbacks in general terms as follows :

* The results of this investigation were presented at a recent meeting of the East Midland Society of Medical Officers of Health, and are to be published separately.

XUM

(B) *Tuberculosis in Goats.*—In the belief that the presence of goats minimises the severity of certain bovine diseases, these animals are permitted to co-habit with cattle. From time to time a goat which proved to be a reactor and was found to be tuberculous on post-mortem examination has been incriminated as the cause of reactions amongst the cattle.

(C) *Contamination of Water Supplies.*—The transmission of infection has been suspected only in the case of slow-running, semi-stagnant watercourses. Swift-flowing streams and large rivers appear to be without danger. Long experience has proved that this question is not important in the setting up of areas, which are not therefore determined on a geographical basis.

(D) *Boundary Fences.*—Inadequate fences and the breaking down of these have, as elsewhere, occasionally brought about re-infection. That this risk is obviated is one great advantage of area work.

(E) *The Non-reacting Tuberculous Cow.*—Such animals have been encountered by all the field workers we questioned, but they were emphatic in claiming that these cases were not common and only a minor cause of breaks. The legal right of the veterinarian to remove for slaughter any animal which, although a non-reactor, may reasonably be suspected, together with the use of combination tests, has eliminated many cases. Occasionally cattle stationed alongside a given individual, usually an aged non-reactor, have constantly become infected. This has focussed suspicion on the individual, which, subjected to special tests, has been found to be an " open " case.

(F) *Avian Infection in Cattle, or Tuberculin Hypersensitiveness in Cattle in Contact with Tuberculous Poultry or Wild Birds.* — The incidence of tuberculosis in poultry has been discussed. Herds of cattle in which unexpected and perhaps atypical reactions occur are tested with avian tuberculin, and if increased reactions are thus obtained these are looked on as evidence of avian infection, or at least of related tuberculin hypersensitiveness. Epidemiological evidence is of great importance in assessing each case. We do not know to what extent these examples occur in Canada, but Cameron (6, p. 103) mentions their existence. Mitchell (private communication) stated that bacilli of an avian type had been isolated from cattle (glands) on several occasions ; he has published (13, strain 143) an account of the isolation of an atypical avian strain.

It is generally conceded that affected cattle react less strongly to bovine than to avian tuberculins and that the capacity to react to the former is not constant. This is borne out in the case of experimental animals (guinea-pigs, chickens, rabbits (13)).

The policy in regard to avian cross infections is twofold : (*a*) check testing with avian tuberculin when anomalous or unexpected results are encountered in herd tests ; (*b*) the dissemination of information on the problem in cattle, swine and poultry.

In regard to possible transmission from crows which are known to be naturally affected, Mitchell's and Duthie's experiment (13) is of interest. A

strain isolated from the common crow was inoculated intravenously into a non-reacting cow. The cow became a reactor to both avian and bovine tuberculins, more strongly to the former. The organism survived in the udder for 210 days without causing macroscopic lesions, and when isolated proved virulent for chickens and rabbits but not guinea-pigs.

Because of the inter-relation between avian tuberculin reactions and Jöhnes disease, inquiries were made about this condition amongst Canadian cattle. It occurs in widely separated parts of the country, but no estimate of incidence has ever been made. The general opinion is that it is increasing. Our conversations with veterinarians and farmers in Ontario and Quebec led us to conclude that, as in U.S.A. and the Continental countries, it is by no means so common as in England. In its endemic form, as we have encountered it in Yorkshire and the Midlands, we believe it to be unknown abroad.

(G) *Subcutaneous Nodules of Disputed Ætiology which are sometimes associated with Tuberculin Reactions in Cattle (so-called Skin Tuberculosis).*—Skin tuberculosis occurs amongst cattle in various parts of Canada ; the ætiology is obscure, the distribution is not related to that of orthodox bovine or other tuberculosis, whilst affected cattle apparently tuberculosis-free may or may not react to the various tuberculin tests, with the possible exception of the subcutaneous method. Several workers in Canada and the States claim that surgical extirpation of the nodules abolishes the tuberculin hypersentiveness. (Private communications from Dr. Bright, Brockville, Canada, and Dr. W. Feldman, Mayo Foundation, Rochester, Minn.) Reacting cattle exhibiting skin lesions are slaughtered in Canada, the authorities being unable to differentiate between a reaction depending on the skin disease or ordinary tuberculosis. (We have published a general account of this problem—*see* this journal, 1937, 93, iv, 135–141.)

(H) *Cross-infection from Man to Ox.*—Bacilli of the human type have been isolated on one occasion from the retropharyngeal glands of a cow (Watson, private communication).

(I) *Artificially-induced Reactions.*—A " traumatic reaction " closely simulating a positive tuberculin swelling can be induced in a caudal fold.

At one time the market value of cattle had fallen to a level at which it was profitable for an owner to pass them in under the slaughter policies. In one district an unusually high percentage of reactors was encountered ; investigation finally revealed that a person had been visiting the herds at a certain period before the official readings of the test were taken ; he compressed the caudal fold with pliers in such a way that a swelling was set up which was recorded as a reaction by the veterinarian. Anomalous results led to an exposure of the method.

(K) *Unexplained Tuberculin Reactions in Cattle.*—After taking into consideration the above facts, Hagan (8), studying the number of cattle reacting to the tuberculin test and showing no visible lesions on post-mortem examination, has suggested the existence of cattle in the United States which react to bovine

tuberculin without any known cause. In Canada, Cameron, in 1930, stated (6, p. 103) that 0.5 per cent. of all cattle tested and 7.5 per cent. of all reactors failed to show lesions on post-mortem, and implies the same possibility. The significance of this is discussed in the U.S.A. report (*see* later in this journal).

VII.—Tuberculosis in Captive Foxes.

The veterinary laboratories have met examples of tuberculosis in captive foxes; we were informed, in the absence of specific publications, that infection was invariably bovine in type, and could be traced to the feeding of diseased animal products. There was no evidence of outbreaks in fox farms endangering the work amongst cattle.

VIII.—The Milk and Dairy Industry in Relation to the Tuberculosis Problem.

(A) *Milk Cleanliness.*—There is no independent National Scheme for the control of milk cleanliness. On the other hand, the majority of milk, whether for liquid or manufacturing purposes, passed through dairies, many of which pay on a quality-cleanliness basis. The supervision of milk consumption is delegated to the municipalities concerned. The laws (4) are not unlike our own Milk and Dairies Order, with two differences: (i) The cities have the right to institute routine inspection of the farms and cows supplying the milk. A township is not in this sense at the mercy of another local authority as in England. (ii) The by-laws are more rigid concerning milk of unsatisfactory cleanliness or originating from insanitary premises. This is not unexpected when it is the consumers' and not the producers' local authority which is inspecting.

(B) *The Milk Supply and the Prevention of Milk-borne Tuberculosis.*—The aim of the milk authorities is to procure that all milk comes from tuberculosis-free herds and is pasteurised, also attaining to a prescribed pre-pasteurisation standard of cleanliness. Medical authorities support the development of the double policy, because (*a*) tuberculosis-free cattle solve the problem of milk-borne infection in rural areas (Price (19, 20) has related the distressing illnesses in children in those unguarded territories); and (*b*) commercial pasteurisation may and does fail, and in any case is difficult to control in practice. Berry (1) has reported on the defects in seventeen plants in large cities; and MacKay (17) on the mistakes of uninstructed employees in other centres. Thus anything that contributes towards a solution of these practical difficulties is favoured. Tuberculosis-free herds is one such step.

Pasteurisation is also supported by producer and distributor. Public opinion is satisfied that milk-borne epidemics are rendered less frequent, if not eliminated, by general pasteurisation and that diseases transmissible from cattle to man are controlled to a similar extent. Murray has summarised the records of milk-borne disease in Canada from 1908 to 1933. In this period 48 outbreaks occurred involving 7,812 persons and causing 681 deaths. In Toronto, where compulsory pasteurisation has been in force since 1914, no outbreaks occurred.

XUM

That the supply of tuberculosis-free and pasteurised milk is being slowly ensured is proved as follows :

(i) *Pasteurisation.*—Year 1934* : Number of Canadian cities of 10,000 population or more, 36 ; total population in these cities, 3,261,868 ; *per capita* consumption, 0.7 pints ; percentage of all milk pasteurised, 88.62. In a similar analysis Murray (16), in 1934, states that in twenty-five municipalities pasteurisation is compulsory.

(ii) *Supply of Milk from Tuberculin-tested Cows.*—This has been discussed (*v. s.*). Twelve cities, each with a population of more than 10,000, receive no milk except from tuberculosis-free herds. (*See* Appendix 4.)

(c) *Dairy Products Destined for Export to the United Kingdom.*—No official relationship exists between the export market and the tuberculosis eradication schemes. The Federal Government Dairy Division maintain a grading system to ensure quality, but do not call on the veterinary department to guarantee a disease-free origin for the milk. In this respect Canada joins hands with Sweden and Denmark to be led only by Finland. It is for this reason that we believe a veterinary directorate should have at least partial control of the milk cleanliness schemes and dairying industry in any country. The situation is automatically adjusting itself because the bulk of butter and cheese comes from Quebec and Ontario, where the majority of tuberculosis-free areas exist. Thus in 1935, of 1,028,489 packages of cheese, 1,006,458 came from these two provinces. Again, the majority of butter is " pasteurised " ; in 1935, of 1,576,175 graded packages, only 5,678 were not pasteurised. But whereas tuberculosis-free herds as a realised project is one thing, the commercial pasteurisation of dairy products by compulsion is another. The former, or both together, is to be preferred.

(*a*) *Live Cattle.*—Store cattle exported to the United Kingdom do not necessarily come from accredited herds or areas or supervised herds, nor is it necessary for them to pass the tuberculin test. They undergo a general veterinary examination ; 25,500 (approximately) reached Britain during the year ended August, 1936. Dairy cattle are admitted by our Government under the same conditions, but the Canadian Veterinary Department have voluntarily insisted that such cattle shall pass both the tuberculin and the abortion tests before leaving.

(*b*) *Meat and Meat Products* for export are prepared from animals with ante- and post-mortem veterinary inspection paid for independently by the Government. Only approved establishments may engage in the trade. Meat is stamped. A special ink† is used which remains legible after the process of curing in the case of hams.

* Laura C. Pepper, Lecturer and Demonstrator to the Milk Utilisation Service of the Department of Agriculture kindly furnished these figures.

† The formula of the ink may be obtained by duly authorised persons from the Veterinary Director-General, Ottawa.

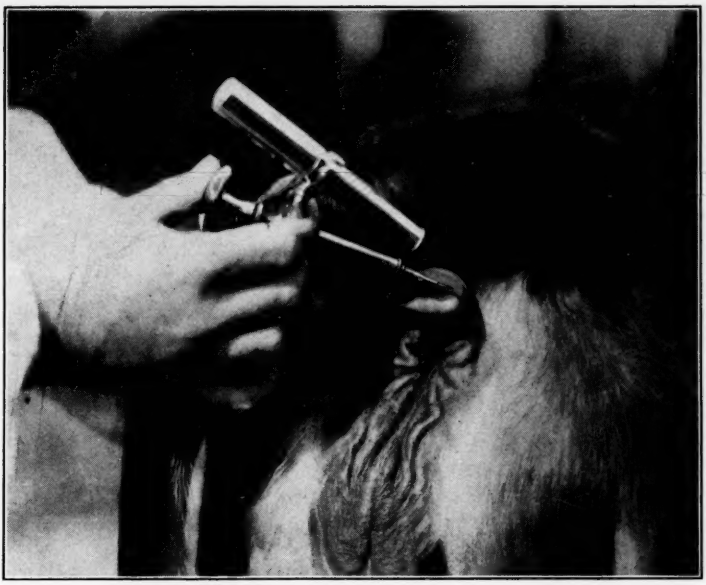


FIG. 1.—Intradermal injection into the right caudal fold (Ox). Note how the fold is held in position with the index finger of the left hand. The syringe carries a torch, a very helpful accessory in practice. (This photograph was kindly presented by the Bureau of Animal Industry, Washington, D.C., illustrating a method which whilst no longer employed in U.S.A. is the routine procedure in Canada.)

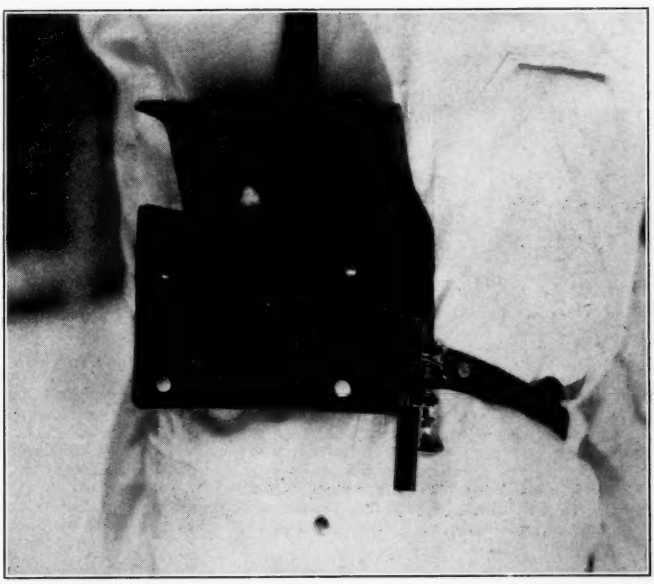


FIG. 2.—Field outfit in use in North America for intradermal injections. The leather case carries the syringe, spirit container with automatic ejector and cotton-wool holder. (Manufactured by the Jensen Sal Co., Kansas City, Kansas, U.S.A.). The photograph was kindly presented by the Bureau of Animal Industry, Washington, D.C.

(*Article by* Geoffrey Brook, D.Sc., F.R.C.V.S., *page* 317)

XUM

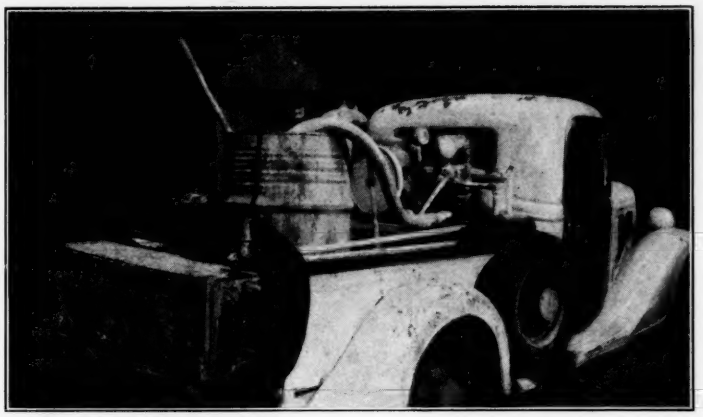


FIG. 3.—Mobile disinfecting unit employed in North America. The solutions, which are pumped by means of a 2-h.p. motor from the 30-gallon container, are delivered either cold or at temperatures up to 212° F. (*see* plan, Fig. 4).

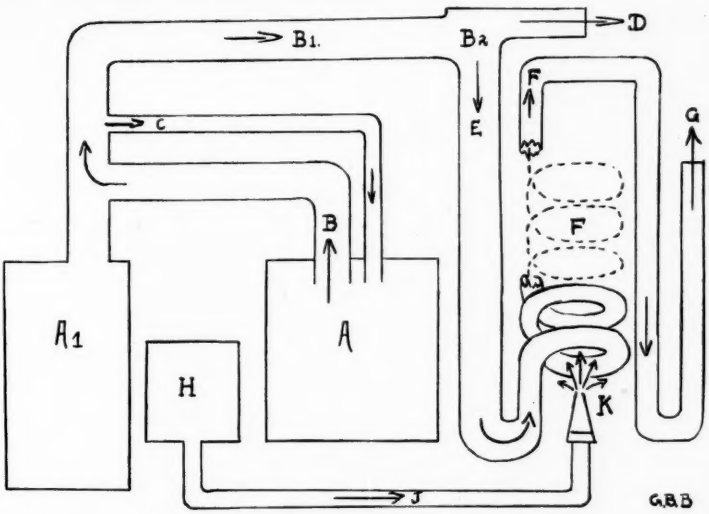


FIG. 4.—Plan of disinfecting unit illustrated in Fig. 3.—The solution is prepared in the 30-gallon container (A). It is extracted by the 2-h.p. pump A1, along the pipes B and B1, to the two-way tap, B2. Solutions to be used at ordinary temperatures leave the system at D. If hot solutions are required they are pumped along the pipe E, through the spiral F and so out at G. A flame ejected from a jet at K plays upon the spiral F to heat the solution. Heating fuel (oil) is stored under pressure in the small container (H) from which it flows along pipe J to the jet K. The latter is pre-heated before pumping is commenced. The spiral tubing is enclosed in the perforated metal chamber seen at the back of the lorry in Fig. 3. The pipe (C) returns the fluid to the container (A) if consumption is discontinued when the pump is at work.

(*Article by* Geoffrey Brook, D.Sc., F.R.C.V.S., *page* 317)

XUM

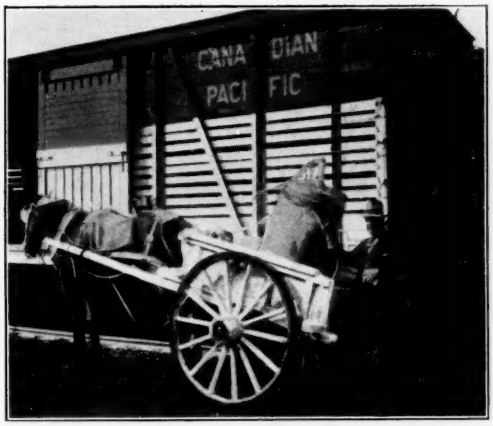


FIG. 5.—A simple barrel and pump disinfector for cattle trucks, Toronto.

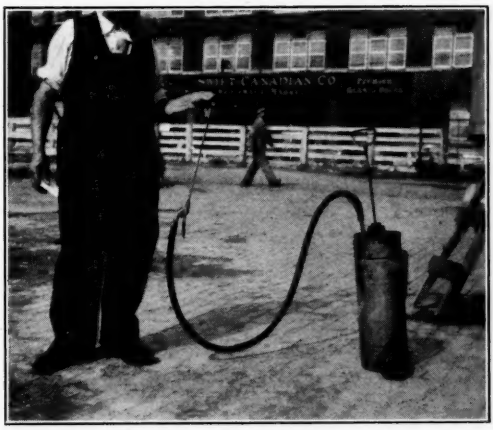


FIG. 6.—A two-gallon portable pressure disinfecting unit for lorries (Toronto Stockyards). (Manufactured by Dobbins Mnf. Co., St. Paul, Minnesota.)

(*Article by* Geoffrey Brook, D.Sc., F.R.C.V.S., *page* 317)

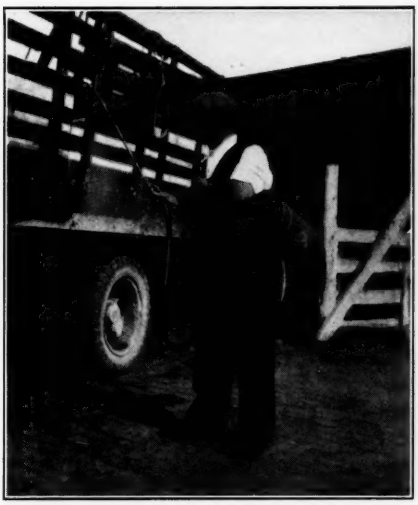


FIG. 7.—Disinfecting lorries with the apparatus depicted in Fig. 6.

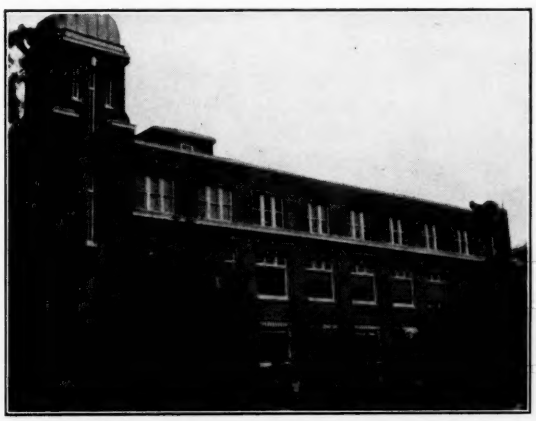


FIG. 8.—Main building, Animal Disease Research Laboratories, Hull, Quebec.

(*Article by* Geoffrey Brook, D.Sc., F.R.C.V.S., *page* 317)

XUM

Appendix 1.

AGRICULTURAL EDUCATION IN CANADA, WITH SPECIAL REFERENCE TO THE VETERINARY EDUCATION OF THE FARMER.

This is organised by both the Federal and Provincial Governments, chiefly the latter.

(A) *The Federal Government* maintains an experimental farm in each province. The distribution of the results of the work of these centres, together with the propaganda campaigns of the various branches (Health of Animals, Dairying, etc.) of the Department of Agriculture is correlated by the Extension and Publicity branch, which organises exhibitions, etc., at all large shows and sends out representatives to tour the smaller summer shows. The district veterinary inspectors co-operate with presentation of veterinary exhibits.

(B) *The Provincial Government.*—The working is well exemplified in Ontario province.

(1) *Agricultural School.*—A central institution is maintained to which is linked a veterinary school. Thus agricultural students receive instruction direct from the veterinary staff. An extension service is maintained which serves the surrounding country and to a certain extent the whole province, in the same very limited way in which our Provincial Investigation Service in England operates in the counties.

(2) *Provincial Extension Service.*—A chief agricultural representative, corresponding to our own county agricultural organiser, supervises the work of assistant agricultural representatives stationed throughout the province. These men are usually graduates of an agricultural college and organise local lectures and farm demonstrations. There is no whole-time attached veterinarian, as used to be the case in at least one county service in England. The provincial veterinarian or local veterinarians may be called in as specialist lecturers.

Working outside the official educational services are the field officers of the National Veterinary Service, and without doubt they represent the most potent factor in guiding the farmer on questions of hygiene of swine, cattle and poultry husbandry. Next in importance are probably the veterinary college direct lecturing courses and the exhibitions by the Federal Publicity and Extension Division.

We are of the opinion that because of the presence of those diseases, the control of which will probably be completely educational (*e.g.*, avian tuberculosis), the appointment of a full-time veterinary officer on the staff of each of the Provincial Agricultural Representative Services would be very helpful.

Appendix 2.

THE ORGANISATION OF THE TUBERCULOSIS ERADICATION DIVISION OF THE HEALTH OF ANIMALS BRANCH, DEPARTMENT OF AGRICULTURE, CANADA.

The Department of Agriculture, presided over by a Minister and Deputy Minister of Agriculture, is divided into several branches, one of which is the Health of Animals Branch under the control of the Veterinary Director-General.

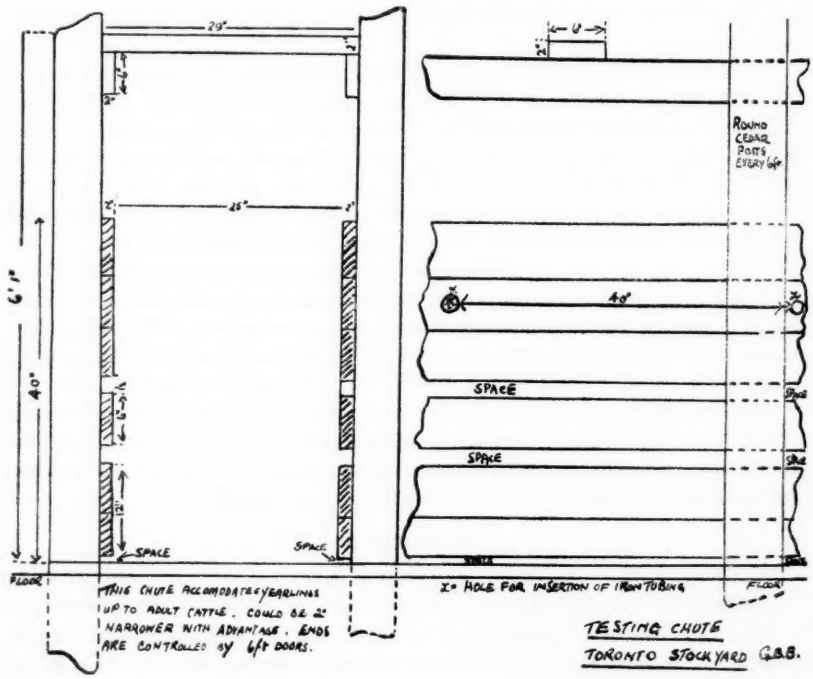
XUM

The latter has access to the Minister through the Deputy Minister. The several divisions into which the branch is subdivided are overlooked by a chief veterinary inspector, each division having a divisional supervisor. The Tuberculosis Eradication Division Supervisor co-ordinates the work of the field staff, which comprises in each province a district veterinary inspector, subordinate veterinary inspectors stationed through the province and those practising veterinarians who have qualified by Civil Service examination to undertake the field work. The district veterinary inspector usually controls duties connected with all scheduled diseases as well as tuberculosis. A total of 150 whole-time veterinarians are maintained by the Tuberculosis Eradication Division.

Research and the manufacture of tuberculin are undertaken by the Animal Diseases Research Laboratories. Propaganda work is organised through the Publicity and Extension Branch of the Department of Agriculture.

Appendix 3.

THE CHUTE FOR TESTING CATTLE IN TORONTO STOCKYARDS (CAUDAL FOLD METHOD).



Appendix 4.

CITIES OF OVER 10,000 POPULATION WHICH IN 1934 WERE RECEIVING MILK FROM TUBERCULIN-TESTED COWS ONLY. (Murray, 16)

Quebec, Montreal, Three Rivers, Sherbrooke, Ottawa, St. John, Saskatoon, Edmonton, Calgary, Regina, Victoria, Vancouver.

Appendix 5.

THE GENERAL PRACTITIONER AND THE ERADICATION SCHEMES.

There are two distinct classifications for practitioners—the accredited veterinarian and the part-time veterinarian. The former is not paid by the Government for his services, but collects his fees from the person employing him. His services are limited to the tuberculin testing of export cattle, the initial tests of additions to herds under Government policies. As the livestock owner must pay for his services he is only employed when the prompt free service of a salaried officer is not available. Accredited veterinarians must pass a departmental examination before they can be so designated.

The Federal Government pays the part-time veterinarian for his services on a *per diem* basis. They are employed as an auxiliary force in the testing of cattle under the Department's control policies. For inclusion on the part-time panel the practitioner must pass an examination conducted under the auspices of the Civil Service Commission.

Appendix 6.

COMPENSATION PAID FOR SLAUGHTERED REACTING CATTLE.

Year.	Sum (Canadian dollars).
1915–16	3,144.00
1920–21	217,899.00
1930–31	1,371,533.00
1934–35	204,102.00
1915–35 (inclusive)	10,005,124.29

(For more detailed figures, *see Annual Reports of the Veterinary Director-General.*)

Appendix 7.

CENTRES, INSTITUTIONS AND AREAS VISITED IN CANADA.

(1) The Health of Animals Branch (and associated divisions), Department of Agriculture, Government Buildings, Ottawa. (2) Division of Dairy Market and Cold Storage, Department of Agriculture, Government Buildings, Ottawa. (3) Milk Utilisation Service, Department of Agriculture, Ottawa. (4) Division of Demography, Dominion Bureau of Statistics, Ottawa. (5) National Dairy Council of Canada, Ottawa. (6) Animal Diseases Research Laboratories, Hull, Quebec. (7) Health of Animals Branch, Department of Agriculture, Montreal (controlling Maritime

Provinces and Quebec). (8) Health of Animals Branch, Department of Agriculture, Toronto. (9) Health of Animals Branch Inspectorate, Canada Packers, Ltd., Toronto. (10) Stockyards, Toronto. (11) Public Health (Veterinary) Offices, Toronto. (12) Banting Institute for Medical Research, Toronto. (13) Ontario Whole-Milk Producers League, Toronto. (14) Ontario Veterinary College, Guelph, Ontario. (15) Several areas and farms, accredited, restricted or in the process of accreditation or restriction (testing, injection and readings, mechanical disinfection, general agriculture, farm hygiene, etc.).

Summary.

Agriculture.—Canada can be divided approximately into three areas. In the first, from the east coast to the western boundary of Ontario, the farmer is engaged chiefly in dairying ; the second, extending west to the Rocky Mountains, was devoted exclusively to stock-rearing or wheat production ; in later years butter production has increased here. The western area carries few cattle except where milk is produced for the Vancouver market. The majority of the dairy farms are self-supporting ; but cattle move eastwards from western prairies for slaughter, feeding or export. A few dairy cattle are sold into the Montreal milk shed, and some are exported to the U.S.A.

There are a little over 8,000,000 cattle in Canada ; average milk production 5,000 lb., probably much higher in dairy herds. Breeds : (*a*) dairy—Friesian, Jersey and Ayrshires ; (*b*) feeders—Herefords, Shorthorns and Aberdeen Angus. The farmers own the farms, the buildings on which differ little in hygienic standard from British steadings.

History of the Tuberculosis Eradication Schemes.—From the outset the Federal Government made itself responsible for all work through a Tuberculosis Division of the Veterinary Branch of the Department of Agriculture.

Free tuberculin testing was introduced in 1897.

The Supervised Herd Plan was introduced in 1905. Under this plan any herd could be tested gratis ; the reactors were slaughtered without compensation. It had several objects : (*a*) to prevent infection of herds known to be T.B.-free by bringing them under official control ; (*b*) to eliminate the disease from lightly infected herds ; (*c*) provide reserves of T.B.-free cattle for future requirements ; (*d*) educate the farmers and win public support for further legislation.

The Municipal Tuberculosis Order followed in 1914. The Government, if so requested by a community, undertook to test all herds supplying milk to that centre, kill the reactors, *with compensation*, and apply the usual quarantine regulations. For several reasons the plan failed to eliminate tuberculosis from the herds involved, but it stimulated a public demand for milk from healthy cattle, and provided a small market for such cattle. It is notable as being the first legislation in North America—probably in the world—under which eradication was attempted using the slaughter-compensation method.

In 1919 *the problem of the pedigree stock-breeding was considered.* Non-tested

pure-bred breeding cattle were being sold into all farming districts. They were a menace to supervised herds, and introduced infection into areas hitherto tuberculosis free. The *Accredited Herd Plan* was put forward to counter this danger. It provided for the free testing of pedigree herds and the slaughter of reactors with compensation. Results have shown that it succeeded in its object.

A collateral development was a compulsory meat inspection service by Federal veterinary surgeons at the larger slaughter-houses. This enabled a nation-wide study of the incidence of bovine tuberculosis to be made.

It is probable that the average incidence at the end of 1920 was about 6 per cent.

The position in 1922 was briefly as follows : (*a*) Agriculturists were ready to support further legislation. (*b*) The Veterinary Department had won the confidence of the Government. (*c*) the public was calling for the provision of a supply of milk from T.B.-free cattle. (*d*) The Veterinary Department had trained a large body of field workers and established a meat inspection service, invaluable as a statistical check on future results and useful in connection with disposal of reacting cattle. (*e*) Bang's systems and the Manchester plan had been adjudged impracticable on the farms of North America. (*f*) A reservoir of T.B.-free replacement and breeding stock had been established.

The same year (1922) *the Accredited Area Plan* was inaugurated. It provided for the testing of cattle in a given area, the slaughter of reactors with compensation and the subsequent periodical re-testing of all herds. Two-thirds of the farmers in a given area were to signify their approval before the plan became operative ; the cattle belonging to the dissenting minority were subject to compulsory testing. The Area Plan has proved to be the most economic of all methods of attack. It appeals to the agriculturist because : (*a*) eradication is effected rapidly and without great cost to himself ; (*b*) it interferes to a minimum with local agricultural practice ; (*c*) disinfection can be deputised to trained teams of workers and carried out more efficiently ; (*e*) reactors can be exported from and T.B.-free cattle imported into an area at a minimum of cost ; (*f*) the scheme is linked to the farm and not to the farmer.

In 1932 the M.T.O. ceased to operate, and to-day we find the Accredited Area, the Accredited Herd, and the Supervised Herd Plans working simultaneously, the majority of cattle being allied to the first.

Results.—(*a*) *Cattle under control.*—The owners of nearly one-third of all cattle in the Dominion are members of the schemes. (*b*) Incidence of tuberculous carcases in the packing stations has fallen in the last ten years from 7½ to 2 per cent. (*c*) In 1934, 69 per cent. of all cows supplying milk to twenty-five cities of 10,000 population or more were T.B.-free ; the percentage is greater to-day. (*d*) The agriculturists, as a body, are co-operating to reduce T.B. to a practical minimum (0.5 per cent. or less) throughout the country.

Tuberculin Testing.—The routine test is an intradermal injection into one caudal fold ; synthetic tuberculin from a bovine strain is used. The primary test on all farms where tuberculosis exists may be a combination of the

intradermal ophthalmic methods, which must be used also when re-infection occurs.

Setbacks.—Statistics show that setbacks are neither serious in extent nor numerous enough to shake one's faith in the efficacy of tuberculin testing. Most important in this connection are (*a*) so-called "skin tuberculosis"; (*b*) avian cross-infections in cattle. Neither of these factors threaten the ultimate success of the schemes, but cause local discontent, additional expense and loss of time in field work. The position regarding avian reactions is simplified by the fact that Jöhne's disease is not as yet common in Canada. A proportion of reactors probably belong to that group of cattle, the existence of which is suspected in the States and which react to tuberculin tests, but are probably not affected with any known form of tuberculosis. The percentage of such animals is minimal and not sufficient to occasion any alarm (*see* U.S.A. report).

Avian Tuberculosis.—The disease has been recognised in all parts of Canada and the incidence computed annually by veterinarians at packing stations. Control is being attempted along educational lines. Tuberculosis has been discovered in wild crows, a strain from which has been shown experimentally to be capable of inducing tuberculin hypersensitiveness in a cow. Avian tuberculosis is the cause of disease and tuberculin hypersensitiveness in cattle and swine.

Tuberculosis in Swine.—The majority of infections are avian in type, but a proportion is bovine in origin. With the eradication of the disease from cattle the incidence in slaughtered swine has recently fallen, but remains at a fairly high level. A further fall is to be looked for when the bovine tuberculosis campaign makes more headway in the prairie provinces. No scheme for the control of tuberculosis in swine has been evolved.

The Dairy Industry in Relation to the Scheme.—(*a*) Milk cleanliness is supervised by the local authorities, which have the right also to inspect the farms supplying the milk. For this reason the decentralised control works better than in England. (*b*) Producers, distributors, consumers and the medical profession are advocates of tuberculosis-free pasteurised milk for consumption in the cities, and tuberculosis-free milk, at least, in rural areas; 88 per cent. of all milk supplied to the thirty-six cities with a population of 10,000 or more is pasteurised. In twenty-five municipalities compulsory pasteurisation of all milk was in force in 1934. (*c*) Dairy products exported to the United Kingdom do not necessarily come from tuberculosis-free cattle. There is, in fact, no official relation between the export market and the tuberculosis campaign. This defect is automatically adjusting itself, as the tuberculosis schemes are most active in the provinces which provide the greatest quantity of cheese and butter for export.

Export of Cattle, Meat and Meat Products.—Cattle exported to Great Britain as stores do not necessarily come from T.B.-free herds, but it is known that tuberculosis is of low incidence in these breeding areas. Dairy cattle must pass both the tuberculin and the abortion tests before leaving for Britain. All meat and meat products must pass independent veterinary inspection. This is compulsory

and provided free by the Federal Government. The inspection service is under the Veterinary Director-General, who also directs the tuberculosis campaigns—a desirable system of centralised control.

Reasons for the Progress in Canada.—We believe that success has been achieved because: (1) The work was formulated and carried out by Central Veterinary Division, the members of which serve a long probationary period in meat inspection and field work. Promotion does not depend in length of service, but in ability. (2) Canada was considered as a unit. Those areas with little or no infection were first brought under control and the supply of T.B.-free stock assured. (3) When the requisite preparatory work had been accomplished the ordinary farmer was offered a slaughter policy with compensation worked on an area basis. (4) The plans were mainly, if not wholly, voluntary in principle. Before any advance could be made the co-operation of the farmer had to be won. This was done by formulating practical schemes and offering liberal compensation.

Acknowledgments.

I wish to place on record my indebtedness to the Veterinary Director-General, Dr. G. Hilton, for kindly correcting this report and approving it for publication; also to the staff attached to the above centres enumerated in Appendix 8; and to the field workers who arranged, at Dr. Hilton's request, for demonstrations in the field and transport to the various farms. This article was prepared as part of a Report to the Medical Research Council on work carried out during the tenure of a Dorothy Temple Cross Fellowship, November, 1935–36.

REFERENCES.

(1) Berry, A. E. (1934): "Common Aspects in Pasteurising Plants, including a Survey of Pasteurising Plants in a Large City," *Canadian Public Health J.*, 36–43 (3 figs.).

(2) "Bovine Tuberculosis," Health Animals Branch, Dept. Agriculture, Ottawa, 1937, J. O. Patenaude, printer.

(3) *Bulletin of the Canadian Tuberculosis Association.* Supplement containing four contributions on Bovine Tuberculosis. Ottawa Medico-Chirurgical Society, Ottawa, December 20th, 1929.

(4) By-law for regulating milk or cream produced for sale, offered for sale, or sold within the Municipality of the City of Toronto, May 20th, 1919. Council Chambers, No. 12226.

(5) Cameron, A. E. (1929): "The Prevalence and Extent of Bovine Tuberculosis in Canada," *Canadian Public Health J.*, 1–5.

(6) *Ibid.* (1930): "Problems in Tuberculosis Control from the Canadian Viewpoint." Eleventh Annual Eastern States Conference, pp. 101–105, Department of Agriculture and Markets, State of New York.

(7) *Ibid.* (1936): "The Health of Animals Branch and its Relation to Public Health," *Canadian Public Health J.*, 218–221.

(8) Hagan, W. A. (1931): "The No-lesion Case Problem in the Tuberculosis Eradication Problem," *Cornell Vet.*, 163–176 (9 rep.).

(9) Hilton, G. (1929): Discussion in reference 19; *see* reference 3, pp. 12–14.

(10) Laidlaw, Campbell (1929): J. G. Rutherford and Bovine Tuberculosis, *see* reference 3, pp. 1–5.

(11) Livestock and Animal Products Statistics, 1934. Canadian Dominion Bureau of Statistics, Agricultural Branch, Ottawa, 1935. J. O. Patenaude, printer.

(12) Mitchell, C. A., and Duthie, R. C. (1930): "Note on Tubercle Bacilli of Avian Origin Harboured in the Udder of a Cow," *Canadian Journ. Res.*, 406–408.

(13) Mitchell, C. A., McKintosh, C. W., and Duthie, R. C.: "Some Observations on the Variable Pathogenicity of Tubercle Bacilli from Avian and Mammalian Sources." *Public.* 58, Animal Disease Res. Instit., Dept. Agric., Ottawa.

XUM

(14) Mitchell, Chas. A., Walker, R. V. L., and Humphreys, F. A. (1934): "Types of Tubercle Bacilli found in Swine of two Accredited Areas," *Rept. Vet. Direct.-Gen.*, March 31st, 1934, Ottawa, 1934. J. O. Patenaude, printer.
(15) Murray, R. H. (1934): "The Extent of Pasteurisation in Canada," *Canadian Public Health J.*, 30–31.
(16) *Ibid.* (1934): "Epidemics in Canada due to Milk-borne Infection," *Canadian Public Health J.*, 19–21.
(17) McKay, A. L. (1934): "Improper Pasteurisation and its Results," *Canadian Public Health J.*, 44–45.
(18) National Dairy Council, Canada, Journal Bldg., Ottawa, Circular Letter, July 20th, 1936 (General Secretary, A. Fraser).
(19) Price, R. M. (1929): "Bovine Tuberculosis in its Relations to Infection in Children," *see* ref. 3, pp. 6–15 (18 refs.).
(20) *Ibid.* (1934): "Milk and its Relation to Tuberculosis," *Canadian Public Health J.*, 13–15.
(21) Report of the International Commission on the Control of Bovine Tuberculosis. *Forty-seventh Annual Report Amer. Vet. Med. Assoc.*, 1910.

DAIRY FARMING.

By WM. TWEED, M.R.C.V.S., D.V.S.M.

County Veterinary Officer, Somerset.

THIS vocation is an old one, yet in some districts it is comparatively new. It is one of the most exacting of any branch of farming, and the farmer who is a milk producer of recent years will tell you that if corn and stock production could be made more profitable, the production of milk would be left to those who had been brought up in this side of farming and whose land for many years had been laid down to permanent pasture. Nevertheless, many developments in recent years have been devised for simplifying procedure. What may be termed modern methods of milk production have undoubtedly made the matter less exacting and rendered it possible to put a better quality product on the market.

Milk production as a rule is the most important branch of the farming system, and the tendency is to keep too many dairy cows on the premises without due consideration being given to the danger of spread of disease attendant on overcrowding and the purchase of stock from unknown sources, instead of replenishing the herd from home-bred stock. It has therefore been realised that the disease factor is a most important one, and that the successful farmer must give the control of disease his serious attention if the undertaking is to remain a commercial proposition and the product supplied to the public is to be wholesome.

Needless to say, there will always remain the need for intelligence and good judgment in any successful farmer to maintain a dairy herd of quality, but the farmer must also be able to put into practice what science has shown to be fact and not theory. Veterinarians are destined to play a much greater part in the dairy farming of the future, and it is hoped that certain ground which has been lost will yet be regained, because many ill-advised methods have been adopted in this industry—methods which a rapidly developing market for milk encouraged.

Dairy farming may be carried out as follows: (*a*) As the only branch of farming; (*b*) as part of a system of mixed farming.

The various types of milk producer may be further roughly classified as follows :

(*a*) The producer who buys newly-calved cows and feeds them out for slaughter at the end of their lactation period. This system is chiefly met in urban or semi-urban areas, the milk being either retailed by the producer or sold wholesale for the retail market. Such producers are often termed " cow-keepers."

(*b*) The producer who buys in-calf cows and supplies these to cow-keepers in his district to replenish their herds. He may, and often does, produce milk for the retail market from a dairy herd as well.

(*c*) The producer who purchases part of his herd, but breeds from most of the cows ; the majority of the calves being sold for veal when three or four weeks old or less.

(*d*) The producer who rears all his heifer calves for replenishing the dairy herd, but also purchases down-calving cows, where and when required, to keep up a level delivery of milk. Year-old or two-year-old heifers may also be purchased or sold for beef or dairy purposes.

(*e*) The producer who has practically a self-supporting herd ; only heifer calves being reared and purchases of newly-weaned calves may, or may not, be made.

(*f*) The producer who only purchases stock bulls, and his herd is practically self-contained in regard to stock.

Replenishment of Herds.

The most striking feature in this respect is the amount of dealing and movement of cows which takes place. One is tempted to ask if this practice is increasing ; but while it must have existed to a greater or less extent amongst cow-keepers in urban areas for some years, it has definitely increased during the war and post-war years. During the war years insufficient heifers were reared and farmers developed the habit of selling their best cows for the enhanced prices obtainable. During recent years extra dairy cows have been kept for milk production in place of the rearing of any heifers surplus to the requirements of the dairy herd. Dairy herds where there are surplus heifers for sale are few and far between, and such stock from Ireland and breeding districts are therefore largely relied upon. Attempts are being made by means of attestation and tuberculin testing, milk recording, pedigree breeding and so on, to give some extra qualifications to home-bred stock at the time of sale, so that producers of self-contained herds may receive some benefit from such surplus stock offered for sale from time to time.

The sale of this better-class stock must be encouraged, as there is not sufficient quantity available for purchase. The other stock commonly offered for sale may be classed as follows : (*a*) Barreners and fat cows, and aged in-calf cows which find their way to slaughter, the aged cows for their high milk yields being generally bought by cow-keepers ; (*b*) Surplus cows sold with a warranty as correct in their udder ; (*c*) cows which have newly calved or aborted ; sometimes the owners in the latter case, fearing they will spread further infection in their

XUM

herd or abort a second time if retained, or go sterile, offer a calf from another cow with them for sale to mislead the prospective purchaser, and in this way the disease is spread to other herds ; (*d*) in-calf cows sold for some defect such as susceptibility to milk fever, mastitis, etc., or hard milkers, kickers, etc. ; (*e*) in-calf heifers which for obvious reasons meet a ready sale.

The purchaser uses his own judgment, but his lack of ability to purchase tubercle and abortion free and even mastitis free cows is not catered for by a veterinary examination prior to introduction of these animals into his herd. It is worth remarking here that some farmers prefer reactors from herds, as they maintain that such cows are often superior to untested stock exposed for sale. In this connection it will be interesting to see the effect of marking reactors to the tuberculin or agglutination tests, should this at a later date become a factor in the eradication of these diseases. At any rate, with the development of " disease free " areas the tendency may be to sell dairy cows, like other agricultural produce, according to quality, either as tubercle or abortion or mastitis free, or perhaps branded as reactors to one or other of these diseases.

Breeds of Cattle.

Naturally, different parts of the country have their own preference for certain breeds of cattle. There is often no definite explanation for the location of these breeds in certain districts other than the fact that they have been found to thrive well. In the beef breeds particularly this is definitely the case. Amongst the dual purpose breeds the Shorthorn and the Shorthorn and Friesian Cross are the most popular, and may be found throughout the British Isles. On the other hand, the Red Poll and Ayrshire, the former particularly, have nothing like the same universal distribution.

The low prices prevailing for cow beef in the past few years have also been instrumental in developing the purely dairying breeds, such as the Guernsey, which suits the south climate particularly. Many leading agriculturists have stressed the need for the development of the dairying breeds, but the practical farmer has found these breeds less hardy, and crossing with the Shorthorn desirable. The distribution of the Ayrshire and Guernsey, for instance, may have been influenced to a great extent by their purchase for tuberculin-tested herds, as they have been obtainable from reliable sources, or, in other words, have not been exposed to infection. The Guernsey and the Jersey have likewise been included in some dairy herds to give an added colour to the milk and raise the percentage of butter fat.

It is desirable to find out from experience which breed of cattle suits the locality and to breed up a herd of pure bred stock if possible ; as those farmers who have done so have met with the most success.

Housing of Dairy Stock.

One is often tempted to lay down definite specifications as to the construction of cowsheds, yet it may be the practice in a few years to make extensive use of

the milking bail or milking shed; the cowsheds being used for housing the cows only when the land will not stand the treading of cattle during the winter months.

The shortage of labour and the urge for specialisation and mechanical methods have developed the milking machine—first, of the bucket type, and, later, the bail—where the milk is pumped direct to the dairy as it is taken from the cow.

The need for good ventilation and cleanliness in the cowsheds, and good ventilation and access of sunlight to the houses used for rearing calves, however, cannot be overstressed for the maintenance of a healthy herd.

As regards the fittings of cowsheds, the modern tubular divisions and concrete mangers with a feeding passage in front are very satisfactory. Where cows are out of doors for the greater part of the year the American yoke has an advantage in the speed with which the cows can be tied and released for milking purposes, and no divisions in the manger are necessary.

The correct length of the cowstanding, depth and width of the dung channel, are most essential to prevent soiling of the cow's udder and hind quarters. With yoke or chain ties, and where the animal can lie down with the head over the manger, 5 ft. 3 in. standings are an average length for medium-sized cows. The drop at the heel should not be less than 6 in., and the dung channel not less than 2 ft. 6 in. wide. In single-row cowsheds the dung channel may preferably be a gradual slope from the heel to the wall, or, in other words, no rear walk is provided behind the cows.

Management.

An essential qualification of a cowman must be that of possessing patience, as the cow is as sensitive as any of the domestic animals. She is easily trained to follow routine methods. This is borne out particularly in the county of Somerset, where field milking is largely practised, and almost any cow can be trained to stand in the field until a leg span is placed on her hind legs, and then she can be milked with no other control. Being fond of routine methods the cow can be easily excited by noise or a change in management, and the art of cowmanship, like horsemanship, requires patience and experience. It is not uncommon to find all the members of a herd nervous, whereas in another herd even calves will show a quiet affection for the attendant; and it can only be concluded that the cowman is largely responsible if a herd shows a high percentage of nervous and known kickers amongst the animals.

Attention to cracked or sore teats and avoidance of wet milking must be given attention, and the best cowmen make a study of their animals. In regard to feeding, the use of bran as a food for cows is highly valued; by some, turnips are thought essential, contrary to the teaching of some agriculturists that these are expensive foods compared to their food value. Both these foods undoubtedly form a useful ingredient of the cow's rations.

It is not proposed to deal with the eradication of disease further than to state that dairy management, to be efficient, should aim in the first place at a "closed" herd, as an added preventive to outside infection. In building up a good herd,

XUM

milk recording can be made much use of in deciding which are profitable and unprofitable animals. The rearing of stock from good progeny and segregagation methods should be adopted in the first stage for eliminating the risk of infection. For veterinary control and tests to be carried out, each animal should be identifiable by tattoo marks, and its pedigree and other history systematically recorded in a herd register.

BILHARZIA DISEASE IN THE UNION OF SOUTH AFRICA.

By F. GORDON CAWSTON, M.D. Cantab.

Durban, South Africa.

TWENTY-FIVE years ago some Japanese investigators showed that *Schistosomiasis* was caused by parasites developing in pond snails, and in 1915 investigations were undertaken to determine the identity of two distinct species of schistosome which Dr. E. E. Warren discovered in *Physopsis africana* Krauss, a common snail in the Umsindusi River, following a report from the Far East of R. T. Leiper and Dr. Atkinson.

Whilst an extensive search was being made along the Natal coast and around Pietermaritzburg, where infection was heavy, the Bilharzia Mission to Egypt, inaugurated by the late Lord Kitchener, discovered the Egyptian snail carriers and reared the adult worms experimentally. Later in the year I had the opportunity of showing examples of *Physopsis africana* to Dr. Cockin, a member of the Bilharzia Mission to Egypt, and of discussing with the late Sir Patrick Manson the cercariæ we had found in Natal.

The following year (1916) Dr. J. C. Becker, of the South African Institute of Medical Research, succeeded in rearing adult Bilharzia worms from parasites obtained from *Physopsis africana* Krauss in the Transvaal, and this common inhabitant of pools containing the broad rush and light-blue water-lily has now been shown to be responsible for the spread of the disease throughout South Africa in both man and stock. The infection is rarely conveyed by allied pond snails, especially *Planorbis pfeifferi* Krauss and *Bulinus forskalii* Ehrenb., but the former is concerned with *Schistosomum mansoni* infection, which is far less common in the Union than further north, and the latter is more commonly infested with amphistome parasites.

Under the Streatfeild Research Trust of the Royal Colleges of Physicians and Surgeons I made a careful survey of localities infested with Bilharzia, and the results were published in the *Transactions of the Royal Society of South Africa* in 1923. These investigations showed that various trematode worms existed in the Union, that *Physopsis africana* harboured schistosomes at Rustenburg, Port Elizabeth, Durban and Lourengo Marques, and that *Lymnæa natalensis*

Krauss was sometimes infested with Fasciola. The report included a valuable description of Bilharzia infection by the Medical Inspector of Schools in Natal, and a similar survey has recently been undertaken in the Transvaal.

Besides the influence of fish life in prophylaxis, nature has provided crabs and birds which feed on snails. Domesticated duck are also very useful in this respect. Pond-snails are attracted by the smell of human or cattle excrement. I have often observed them feeding on dung where cattle graze. But I have also noted that where there is no possible human pollution there is an absence of *Physopsis africana* Krauss. Thus the provision of latrine accommodation for natives would lessen pond snails which help to render running water clean until infected by man or beast.

Education has been of great value in inculcating the principles of disease prevention among farmers and others in the Union, and special mention may be made of the course of instruction in hygiene which is given to the Special Service Battalion, for many of its members are recruited from infected areas. It is common for natives to pollute river banks where rushes abound, often above a township, and every endeavour should be made to emphasise the importance of safeguarding a water supply, and necessary provision should be made for native needs where this does not exist. I have visited a native township in Natal which is without water supply other than a badly-infested river, and where latrine accommodation is absent from its school, though known to be infected with Bilharzia for years.

The indiscriminate destruction of pond snails must be avoided, but *Physopsis* should be scheduled officially as a noxious pest and eradicated in the interest of man and stock, whilst all stock inspectors should be able to identify its shell. In 1915 I found 14 per cent. of *Physopsis* from the Umsindusi infected with schistosomes, and in 1916, 16 per cent. of examples in and around Durban. Though I have found the shell at East London, cases once common there had all contracted the infection elsewhere, and infection has become uncommon in the Cape Province.

With great ease I collected *Physopsis africana* Krauss at Bremersdorp, Swaziland, where infection is common, and at Umtali, Southern Rhodesia, but I could find only *Bulinus forskalii* Ehrenb. as a likely carrier in Mauritius, and Dr. A. R. D. Adams has shown it to be easily infected experimentally. During a hurried visit to Fonteinbloem, close to the Johannesburg municipal boundary, I confirmed *Schistosomum hæmatobium* infection in a school boy, as reported by the Schools Chief Medical Officer, Dr. Kieser, and I collected *Bulinus forskalii* there. This occasional carrier of Bilharzia parasites in Natal must be regarded with suspicion.

I have seen Bilharzia patients infected from the supply tributaries of the Hartebeestpoort dam and Shongweni reservoir, and have collected *Physopsis africana* in both places. Special endeavours should be made to remove influences which foster Bilharzia snails in huge collections of water which facilitate the spread of parasitic diseases, especially in the dry season when the water is shallow over large areas.

XUM

Natives are the principal sufferers and carriers of human infection ; sheep are more often infected than cattle. The first case of what appears to be bovine infection of man was reported from Madras in an Indian who had acquired the infection in Natal, where many Indians are now infected. The infection of natives has not yet received the official attention it deserves, and there is practically no medical inspection of native or Indian schools. Recently I found Bilharzia infection in 27 out of 58 native juvenile offenders who were unlikely to receive any treatment at their own request or willingly submit to a complete cure of the infection. The suggestion has been made that rotting berries believed to destroy the snail hosts be added to pools of water in the Sudan, but it is undesirable to add to the debris already present, and attention should rather be directed to methods of keeping the river-banks free from overgrowth and the river-bed free from decomposing vegetation. In this connection Dr. P. Manson-Bahr's recommendation that pond snails should be prevented from entering the Nile delta deserves further attention.

Conclusions.

Schistosomiasis of stock does not correspond in distribution with the allied disease in man, but the molluscan host in South Africa is *Physopsis africana* Krauss, and an allied *Physopsis*. The breeding of these inhabitants of collections of water along river-beds might possibly be controlled by stock inspectors. The disease was successfully stamped out in 1928 and 1929 from badly infested flocks of sheep at Humansdorp in the Cape Province, and the effort deserves to be extended to other parts. Ever since 1915 *Physopsis* has been known as a carrier of schistosoma of man and some other animals in South Africa, but little has been attempted to control its breeding. By spraying pools believed to contain anophyles with chemicals, much wild life has been discouraged, but *Physopsis* is resistant to such methods and persists as a menace to man and beast when the malaria danger has passed.

In Swaziland I have noted *Physopsis* breeding close to an agricultural show ground, and in the Union both this snail and the carrier of Fasciola infection often occur together. Schistosomiasis is of sufficient economic importance in South Africa and elsewhere to justify the stocking of rivers with appropriate fish and the encouragement of domesticated duck.

MAIZE.

An Incident in George Borrow's Travels in Spain.

By EDWARD MORGAN, F.R.C.V.S., D.V.H.

Venezuela.

It is exactly a hundred years ago since George Borrow travelled extensively in Spain, where his skill as a horseman surprised the Spaniards, and undoubtedly this, as well as his fluency with the Spanish language, influenced the authorities on more than one occasion to release him from prison. They said, "*Es muy diestro* [he is

very skilful], and can ride a horse and dart a knife full as well as if he came from our own country, and he understands the seven gipsy jargons." Spain was then, as now, in a state of revolution, to which Borrow refers in his "Journeys, Adventures and Imprisonments of an Englishman in Spain." Recently on my homeward voyage from South America, whilst reading Borrow's "Adventures in Spain," I came across a paragraph which concerns his diagnosis and treatment of an ailment in his horse. This I consider is worth quoting for more than one reason, as it is of great importance to those who feed entire maize to their horses and mules:

"We arrived at Betanzos late in the afternoon. The weather during the greater part of the day had been dull and lowering, and we found the atmosphere of Betanzos insupportably close and heavy. Sour and disagreeable odours assailed our olfactory organs from all sides. The streets were filthy; so were the houses, and especially the *posada* (inn). We entered the stable; it was strewn with rotten seaweeds and other rubbish, in which pigs were wallowing; huge and loathsome flies were buzzing around. 'What a pest house,' I exclaimed. But we could find no other stable, and were therefore obliged to tether the unhappy animals to the filthy mangers. The only provender that could be obtained was Indian corn. At nightfall I led them to drink at a small river which passes through Betanzos. My *entero* swallowed the water greedily; but as we returned towards the inn, I observed that he was sad, and that his head drooped. He had scarcely reached the stall when a deep hoarse cough assailed him. I remembered the words of the ostler in the mountains: 'The man must be mad who brings a horse to Galicia, and doubly so he who brings an *entero*'. During the greater part of the day the animal had been much heated, walking amidst a throng of at least a hundred pony mares. He now began to shiver violently. I procured a quart of anise brandy with which, assisted by Antonio, I rubbed his body for nearly an hour, till his coat was covered with a white foam; but his cough increased perceptibly, his eyes were becoming fixed, and his members rigid. 'There is no remedy but bleeding,' said I. 'Run for a farrier.' The farrier came. 'You must bleed the horse,' I shouted, 'take from him an *azumbre* of blood.' The farrier looked at the animal and made for the door. 'Where are you going?' I demanded. 'Home,' he replied. 'But we want you here.' 'I know you do,' was his answer; 'and on that account I am going.' 'But you must bleed the horse, or he will die.' 'I know he will,' said the farrier, 'but I will not bleed him, but under one condition.' 'What is that?' 'What is it!—that you pay me an ounce of gold.' 'Run upstairs for the red Morocco case,' said I to Antonio. The case was brought; I took out a large fleam, and with the assistance of a stone drove it into the principal artery of the horse's leg. The blood at first refused to flow; at last, with much rubbing, it began to trickle, and then to stream; it continued so for half an hour. 'The horse is fainting, *mon maître*,' said Antonio. 'Hold him up,' said I, 'and in another ten minutes we will stop the vein.' I closed the vein, and whilst doing so I looked up into the farrier's face, arching my eyebrows. '*Carracho*, what an evil wizard,'

muttered the farrier, as he walked away. ' If I had my knife here I would stick him.' We bled the horse again during the night, which second bleeding I believe saved him. Towards morning he began to eat his food."

Borrow expressed the opinion that the horse's illness was caused by being heated and getting excited by walking amongst pony mares. The symptoms described by Borrow are familiar to those who have resided in countries where Indian corn (maize) is the staple diet of horses and mules. If Borrow had allowed his horse to drink water before feeding him with Indian corn instead of afterwards, the probability is that he would have avoided both the trouble for himself and the pain inflicted to the horse. Colic caused by giving water to an animal immediately after a liberal feed of solid maize generally shows distinct symptoms to those of common colic of the horse. The animal appears rigid. The nearest approach I can think of are the symptoms of a horse with a ruptured stomach. The seat of the trouble is the engorged small stomach.

In Venezuela entire maize is the staple diet of horses and mules, but even the most ignorant of those who handle these animals are most cautious not to allow them to drink for a few hours after a feed of maize, but always give them water first. The writer always feeds his horses with solid maize, but always denies them water for several hours after the feed.

Clinical Articles

A Coin as a Birthmark Indicator.

By C. F. SHAWCROSS, M.R.C.V.S.

Altrincham.

DURING 1917, in Palestine, it was reported to me that a six-year old South American mule had some hard object under the skin on the flat part of the near shoulder. An incision was made and the object extracted, when it was found to be a silver dime. I was very curious as to how and why the coin had got into that position. One theory is that natives place the coin under the skin as a charm for lameness.

In a recent conversation with Sir Frederick Hobday I learned that a coin with the year of birth of the animal is sometimes placed under the skin as a record of age. If the latter theory is correct, one would have expected to find many mules with coins in that position, but this is the only case I have met in my experience with thousands of mules during the War. Unfortunately, the coin, which I kept for many years, has been lost or mislaid, so I am unable to check up the age of the mule with the date on the coin; which, if I ever noticed it, is forgotten.

XUM

The Use of Cod-liver Oil for Fistulous Withers.

By J. W. HALL MASHETER, M.R.C.V.S.
Newnham-on-Severn.

In recording this case I am not taking into consideration causal factors other than necrosis of the dorsal spines, which I think it will be agreed is, as to complete recovery, pretty nebulous.

This was the second case I had on this farm in 1936, one of which, a black shire gelding, made a complete recovery without a radical operation, but there was no bone necrosis. The case I am recording is that of a black shire mare, and is one of those cases which seem to defy treatment of any sort. She has been on my books intermittently since April, 1936, and in spite of lancings, injections of all sorts, therapeutic and biological, and a radical operation in June of that year, there has always been a recurrence of suppuration, mainly, I think, due to the impossibility of completely following the ramifications of the fistulæ, which were very numerous and deep-seated.

Three spines of the dorsal vertebræ, deeply bedded in an enormous swelling on both sides of the withers, were found to be necrotic when the case was first seen. This swelling was freely opened and drainage established, and for a time this seemed to be satisfactory. At a later stage there was an extension of the area affected, fistulæ running forwards and downwards on the neck and backwards and downwards behind the shoulder.

A radical operation was then performed, and this seemed to be satisfactory. The mare was put to work, but in April, 1937, there was a sudden recrudescence of the swelling of the withers, due to pus formation. The swelling was lanced and the cavity dressed, but despite changes in the dressings nothing seemed to do any good. The case appeared to be hopeless and we seriously thought of having the mare destroyed, but before doing that, on May 28th, I thought I would try the effect of crude cod-liver oil. The ramifications of the fistulæ on both sides of the withers took *eight ounces* of the oil at the first dressing before the cavities were filled. This was vigorously massaged. The injections were made every second day. The result was an enormous amount of swelling and a copious discharge of pus, but very little pain. The appearance was rather alarming, but I thought the discharge of pus must be advantageous, and I persisted with the oil. The improvement in the general condition of the mare was very marked ; she put on flesh rapidly, lost her old coat and the skin was " sleek " and pliable. The swelling gradually went down and less oil was necessary, until at the beginning of June she was put to work as she appeared to be "cured." She has had a strenuous " hay time " without any bad effects. There is still a slight amount of new tissue, but that is gradually receding.

Discussion.—Does the result of cod-liver oil treatment open up visions of simple injections and massage instead of radical operations ? Is the action of cod-liver oil "local" or "systemic" ? Personally, I am inclined to think the latter—from absorption.

Purpura Hæmorrhagica.

By F. L. GOOCH, F.R.C.V.S.
Stamford.

On June 29th I was called in to see four young horses in a field, and found two of them suffering from strangles. In a paddock adjoining the same field was a shire mare and foal, which I ordered to be moved to another field some distance away, hoping to secure them from an attack of strangles, but on July 23rd I was asked to visit this mare and found her suffering with a large abscess in the submaxillary space; this was lanced and pus evacuated, and no other abscess formation took place until August 1st, when a swelling was noticed in the region of the guttural pouch; this was dressed and eventually lanced; at the time the foal had an abscess just below the left ear, which was lanced.

On August 3rd the mare was much worse, and I diagnosed purpura with swellings at the nostrils, chest, hind leg, and during the next few days other swellings appeared, and a nasty blood-stained discharge from the nostrils. I gave a subcutaneous injection of piro-olive, and pot. chlor. in water, bathing the swellings with an astringent lotion. On August 11th the foal was apparently affected with purpura; a large swelling appeared on the right shoulder, another in the region of the mammary gland. The mare was very old, and was found down in the yard on August 13th, and with difficulty she was placed on her feet, but went down again, and as the foal was now feeding well and not dependent on the mare's milk, the owners asked me to destroy the mare. In the meantime the foal yielded to treatment and is now practically convalescent. I have reported the history of this case in order to ask a question: Did the foal contract the disease through the mare, or, like the mare, did a secondary disease follow the attack of strangles? There were no purpura markings in the foal's nostrils. Were the swellings due to purpura, or were they just fresh seats of the strangles?

On Saturday, August 21st, we were called to see a horse on another farm belonging to the same owners, and found they had had an attack of strangles on two or three horses in a field, and had been treating them themselves. But on visiting the horse we found him suffering from purpura, with enormous swellings in the body, sheath and near hind leg, also around the nostrils and face. This horse is still under treatment.

Parasitic Bronchitis—Husk or Hoose.

By RICHARD HUDSON, F.R.C.V.S.
Retford.

The paper on the subject at Bournemouth and the discussion have induced me to give some of my experiences on the subject, partly because I found so many practitioners condemned the old treatment by intratracheal injection, and partly because they did not have anything better to suggest. Why, after fifty years or more of use, has intratracheal injection come in for condemnation?

The working out of the life history of the parasites, although interesting, has added nothing the practitioner did not know or surmise before, and for which he adapted his treatment and advice. Nevertheless, it is good to know it, and some of us would like to know a little more. Recently I have been called to treat thirty-two beasts, and on inquiry if the cattle had hoose on the fields last year (a bad year), the owner replied that he could not remember when he had it last. All were home reared and bred excepting one which was bought as a calf a few days old. How did this field become so badly infected as to produce hoose in thirty-two beasts in a few days ?

I have noticed that fields when at their best after slag dressings are at their best for producing hoose parasites, and this may be because they hold more moisture. On one farm, after the fields had been enriched by slag and bone tillage, I had the cows to treat yearly for several years, but now they have lost the benefit the stock does not suffer from hoose.

Sometimes improvement follows a change of pasture, but often all fields appear to carry infection. Last year a batch of year-and-a-half-old bullocks were injected twice and sent off to another field. They quickly recovered, but on the same farm a month later six eight-months-old calves were attacked. They developed pneumonia at once and five died. The post-mortem examination of some showed very few parasites, and one would have thought that if pneumonia is due to mass invasion that many would mature in the time—up to a fortnight—that they were ill. It is common to find few parasites after pneumonia has developed. This is not due to injection, because I do not inject pneumonia cases. The animals' condition does not influence the progress of the disease much, unless they are on dry food; for out of five strong, fat, Lincoln reds, one, a three-year-old bullock, and two, second-calf heifers, were slaughtered or died, and the others were very ill.

For many years I injected most of the large lamb flocks in my district with marked benefit, but owing to the demand for early lambs the flocks have been much reduced by autumn, and so have not suffered much from hoose. Last summer there was a tendency to hold more lambs and to purchase for winter feeding, with the result that I had again several flocks to inject. One flock which had been treated with various hoose remedies, and in which thirty had died, improved rapidly after injection, and out of twelve which could hardly crawl about only two or three died.

Years ago I used Penhale's injection, but it was too strong for weakly calves and lambs, and I gave it up in favour of the one in Steel's Book on Sheep :

℞ Acid. Carbol.	m. v
Ol. Tereb.	m. xv
Chloroform	m. viii
Ol. Olivæ (or Ol. Rapis)	ʒ i

Dose : Lambs, up to 1 dram ; calves, 6–12 months, 2–3 drams ; older animals, 3–10 drams.

XUM

Lambs are injected through the space between the thyroid and cricoid cartilages. It is quicker than the lower site (184 were injected recently in one and a-quarter hours without hurrying).

I think that the chemists, quack medicine vendors, various talkers and advisers have about " shot their bolt," and I am finding that owners are coming again for injection treatment. It is best carried out by the practitioner because he can watch the dosage and decide on the fitness of the animal for injecting. I prefer to have all animals made fast with a loop round the neck and pulled up to the hay-rack, the noose being under the jaws so that it does not constrict the neck. The animal is then prevented from running back when the skin is pricked and the injection given. I also prefer to use a plain needle with a well-sharpened flat point. The syringe should be short and hold about one and a-half ounces, and the nozzle about two inches long so that the injection is picked up without messing the barrel. For lambs, the holder is seated on a box; a chair is a disadvantage because he cannot lean back. The lamb is placed on its rump, and the head drawn back well into the holder's groin, the hand being under the head and fingers round the lower jaw, avoiding the nostrils, or the lamb will struggle for breath. The left fore-leg is held at the forearm, and the right is held down by the holder's arm. The needle, about 1.2 to 1.4 mm. thick, is inserted in the cricothyroid space. The syringe should hold one dram, not more, or it will be too heavy and the piston should work freely. Metal pistons soon work too freely and fall when the syringe is inverted. All-metal syringes are best. They do not break when dropped. Sometimes nearly every lamb will kick and struggle and hinder progress. If so, let another do the holding, for some men cannot be taught to hold satisfactorily.

A Coincidence—or What?

By F. L. GOOCH, F.R.C.V.S.
Stamford.

THIS year I was asked to remove a growth from the upper eyelid of an Ayrshire cow. The growth, which was the size of a cricket ball, was removed and the surface cauterised and dressed with an ordinary wound lotion; but after a time the growth recurred, and also the lower lid became affected. The cow being very old and nearly due to calve, the owner did not have the growth removed a second time, but said that as soon as she had calved he would have her destroyed. A good heifer calf was born, but here comes the coincidence—the calf had only one eye. There is no doubt but that the growth was malignant.

Swine Erysipelas in a Pregnant Sow.

By P. WAIT,
Student, Royal Veterinary College, London.

SUBJECT was a large white sow due to farrow in three weeks time.

History.—There had been no signs of illness until two days before my visit on Monday evening, August 23rd. She was in very good condition and had been

very healthy. She had not taken any food on Sunday, August 21st nor Monday, August 22nd, but previous to that she had eaten everything that was given to her.

Clinical History.—I found her lying down in a very warm sty, taking little notice of the surroundings. She had three or four typical diamond-shape swine-erysipelas spots on the right side of the body: the left side was free. An injection of 15 c.c. of swine erysipelas serum was given. The owner also complained that her bowels had not been moved for two days. An enema of warm water containing four ounces of magnesium sulphate was given, but no fæces came away. Three drams of potassium nitrate were also given in a little bran water.

On the next morning, Tuesday, August 24th, she appeared to be a lot better. She was up and inclined to feed and had taken some bran water. The swine erysipelas spots had become less noticeable. Another injection of swine erysipelas serum was given. Visiting on August 25th, she was found to be very ill and semi-conscious. She had aborted one fœtus; it was in a decomposed state and she had eaten some of it. The swine erysipelas spots had faded and there was a diffuse red rash all over the body. She was given a stimulant hypodermically, 60 m. ol. camphor (1 in 10), and took no notice when the needle was passed through the skin, showing her condition was very grave. She died at 4 p.m. that same day.

Post-mortem Findings.—The peritoneal cavity contained a bloodstained fluid. The liver was enlarged, also one end of the spleen. On opening the uterus the fœtuses were found to be decomposed, the head of one had disintegrated and skull bones were scattered about. It looked as if they had been dead for two or three weeks at least.

Remarks.—It was improbable that swine erysipelas was the cause of death. It was more probably due to septicæmia produced from the decomposing fœtuses. It was rather remarkable that symptoms of illness had not occurred before they did, as the fœtuses had probably been dead two or three weeks. What was the cause of the death of the fœtuses? The sow had been on a diet of sharps, flaked maize, and fish meal, and exercise in a paddock was available. Feeding had been irregular in that the owner, being a publican, was very busy on Sundays, on which days the sow was given a double feed in the morning and nothing more until Monday morning; on weekdays feeding was twice a day. It is possible that the large amount of food taken on Sunday produced pressure on the full uterus and caused the death of the fœtuses. Inquiry shows that no abortions have happened in connection with other sows put to the same boar, except in one case where a bull had broken loose and caused a disturbance in the yard.

Interstitial Nephritis.

By S. M. WOODWARD, M.R.C.V.S.
Birmingham.

CALLED on June 26th to attend a bull terrier, four and a-half years old.

Symptoms.—Depression, vomiting, fœtid breath, arched back, teeth coated, tongue brown, pyorrhœa, lameness of hind leg, craving for water.

XUM

Gave bismuth mixture to relieve sickness, suspecting kidney trouble, left instruction to collect urine for analysis.

July 3rd.—*Analysis report*: Sugar absent, albumen present 0.44 gr. per fluid oz., or 0.10 per cent. As all sickness had ceased on June 30th, bismuth was discontinued, and uretone (P., D. & Co.) was given in tablespoon doses three times daily. A marked improvement followed: dog alert and barking, appetite improved, craving for water continued.

From July 10th, Elixir Theophyllin Co. (P., D. & Co.) was prescribed in place of uretone. Appetite maintained: tripe, veal jelly, cow heels, Benger's food, barley water and brandy taken. The temperature remained constant throughout, 101.4° F.; pulse, 120 and full. About July 20th appetite not so good and dog losing flesh rapidly, loss in weight averaging six ounces every four days. Analysis of urine showed a *decrease* in albumen, 0.31 gr. per fluid ounce, or 0.07 per cent. On July 30th sickness returned, the dog became comatose and died during the night. Weight at death 34 lb.; should have weighed 60 lb.

Post-mortem.—Capsule of kidney adherent to the cortex. Surface of cortex irregular like morocco leather. Consistency of kidney when cut through, tough and fibrous; cortex much shrunk; interstitial nephritis.

A Treatment for Swallowed Needles.

By V. BERWYN JONES, M.R.C.V.S.
Guildford.

A MASTIFF puppy, six months old, when playing with its mistress, was seen to swallow a needle and cotton at 10.30 p.m. The treatment consisted in taking a large handful of cotton wool, teasing it out and mixing with butter into pills the size of a large walnut. The puppy was fed with these and swallowed about sixteen or eighteen of them. This was followed two hours later with two ounces of liquid paraffin, being repeated every two hours, until the bowels acted. At 6 a.m. the next day the puppy had a large evacuation which contained the needle and thread entangled in a large ball of the cotton wool. I have also found this very satisfactory for safety-pins and jagged pieces of bone. It is always better to use long-fibre cotton wool.

Reviews

Die Krankheiten des Kaninchens. By Professor Dr. OSKAR SEYFRIED, Director des Instituts für Tierpathologie der Universitat München. Berlin: Springer. Price 25.80 Mks. (£2).

THE second edition of "Diseases of Rabbits," by Professor Seyfried, well-known pathologist of the University of Munich, has just been published, and should prove to be of great interest and practical value not only to members of research institutes,

but also to the veterinary surgeon in general practice. Since the first edition ten years ago there have been no text-books written dealing with the subject in such a scientific manner, apart, of course, from publications in periodicals available only to research students. This book lays emphasis on the most essential and important points of modern research diseases in such a manner as to be of equal service to both practitioner and those in laboratories. The subjects so adequately dealt with comprise infections, parasitic, and organic diseases; and recently acquired knowledge, particularly in the sphere of bacteriological and virus infections, hereditary diseases, avitaminosis and tumours, is given in detail, being arranged clearly and concisely under the customary headings of ætiology, symptoms, pathological anatomy, diagnosis, treatment and prevention. The paragraphs dealing with differential diagnosis give valuable advice on the use of pathological and histological lesions for diagnostic purposes. The work is illustrated extensively with many excellent photographs which greatly enhance its usefulness.

Diagnose und Bekampfung der Parasitaren Krankheiten unserer Haustiere. By Dozent Dr. Felix Schmid, Director des Instituts für Parasitologie der Tierarztlichen Hochschule, Hanover. Berlin: Richard Schoetz. Price 7.40 Mks. (12*s.*)

It has long been a desire of practitioners and students to have a concise and lucid account of the parasites of domesticated animals, as the present text-books on this subject are mostly too extensive and voluminous for the busy practitioner or student. To answer this demand, the lecturer on zootechny and parasitology of the Hanover College has published a small handbook on the " Diagnosis and Treatment of Parasitic Diseases." He deals, in some 120 pages, with the commonest entro- and ecto-parasites. The book is divided into two main parts. The first part consists of an introduction into general parasitology, classification of parasites, general biology, diagnosis, technique of examination, both of fæces and blood, general directions for protection and prevention of parasitic infestation. The second part deals with the parasitic diseases of the various animals and gives valuable information upon the individual parasites which attack horses, ruminants, pigs, carnivora and poultry. Each chapter is worked out in detail; the different species and varieties are mentioned; site of invasion, symptoms, life-cycle, treatment and prevention are treated in an easy and comprehensible style. Drawings and pictures illustrate the subjects. Finally, the editor gives instructions for the sending in of parasitic material for examination; a list of animal hosts arranged under the different animals and organs; and a very useful illustrated chart for fæcal examination, showing in tabular form what results in the different animals could be expected. This handbook, dealing as it does with the prevention and eradication of parasitic diseases from the point of view of economics, forms an extremely serviceable source for the enrichment and revision of knowledge both for the practitioner and the student.

Correspondence

MEAT INSPECTION IN NEW ZEALAND.

To the Editor of The Veterinary Journal.

Sir,—I have been very much interested in what I have read from time to time in the press of the increased demand for veterinary surgeons in this country for in my short span I have seen the value of the utilisation of this profession as a national

asset. I was born in a town of about 3,500 inhabitants, in one of the best dairy districts in New Zealand, and as far back as 1910 all meat for human consumption had to be killed and prepared under the inspection of a qualified veterinary surgeon at the public abattoir. You can therefore imagine my surprise on coming to England to find that a butcher is allowed to have his own private slaughter-house in which to kill his beasts, and that the meat, if inspected at all, is passed by a sanitary inspector and not by a veterinary surgeon. Also the manner in which meat is exposed for sale and the astonishing way that any person can handle the meat in choosing a joint.

I would like some of the people in this country to see the conditions under which meat is handled in our New Zealand meat works and abattoirs. How spotlessly clean everything is and how strict the supervision is as to the quality of meat for import. It would satisfy the most fatidious. The handling of butter in retail shops is another shock here. All butter I have seen sold in my homeland was already wrapped, untouched by hand in the factory, and none of the mud-pie effects as practised here in the shops.

Our milk control is just as strict and our system is being copied in many lands.

All these services are under the supervision and control of qualified veterinary surgeons, and the value of this is reflected in the high standard of health in our population. Our farmers combine and have associations, even in the bush blocks, employing veterinary surgeons to maintain and supervise the high level of their herds and flocks so that our produce can compete in quality with the best in the world.

Your campaign for the greater use of qualified surgeons is, in my opinion, of vital importance to the general health of this nation. Healthy animals mean healthy food products from them, and no amount of exercise or fresh air can make an A1 nation on C3 food. The veterinary profession has a birthright; why fritter it away? —I am, Sir, yours faithfully,

A. T. BARON.

54, Ravenscourt Gardens,
London, W.6.

INOCULATION AGAINST DISTEMPER.

To the Editor of THE VETERINARY JOURNAL.

SIR,—I read with great pleasure and profit the article in your issue for July by Mr. Wilkinson on "Immunisation against Canine Distemper," and in the first place must congratulate Mr. Wilkinson on the concise and practical way he has recorded his careful clinical observations. I have not inoculated as many animals as Mr. Wilkinson, but I have inoculated hundreds, and up to the present have always applied the vaccine-virus inoculation and have very little experience of the simultaneous virus-serum inoculation.

When the simultaneous inoculation was first introduced I wrote to Major Dalling to ascertain his opinion as to which was the better application, and he very kindly replied that the vaccine-virus was the safer test, and said I was wise to stick to that test in practice, particularly if I had not the patient continuously under my personal observation.

After reading Mr. Wilkinson's article very carefully, I was led to the conclusion that he had practically discarded the vaccine-virus inoculation for the simultaneous, and finding that Mr. Wilkinson had been working in conjunction with Major Dalling, I again wrote to Major Dalling asking if he would give me his candid opinion as to which was the best method. He promptly replied: "The great advantage of the simultaneous method is that the operation is over in a short space of time and the dog is immune

within a day or two after being injected. I feel, however, that there may be more risk in this method than in the old vaccine-virus method. I think also that in practice the vaccine-virus method is the one I would use, unless I had the animals under my observation for some little time after they were injected."

I always like to trust " the bridge that has carried me safely over," and since I made my first inoculation I have had no breakdown in the immunity, *i.e.*, I have never had a case reported to me in which the dog that had been immunised had afterwards had an attack of distemper. I have had several cases that have caused me some anxiety. Two cases I might mention, one a Pekinese, the other an Alsatian. In each case fits occurred on the third day after the virus injection, but the patients quickly recovered. The instance which caused me the most anxiety was in a kennel of foxhounds. All the present-year puppies were vaccinated with the " vaccine " ; at the end of the first week one of the puppies had distemper and died. In this case I place all the blame on myself, as it was a weakly puppy and the last to be vaccinated, and in my opinion was the subject of distemper at the time of the inoculation with the vaccine. It should not have been inoculated. Another puppy developed a swelling of the limb that was injected, and died before the fourteenth day from septicæmia ; but I was able to satisfy myself that the swelling commenced in the foot, the result of an injury, and that the septicæmia had nothing whatever to do with the inoculation ; but the owner attributed both deaths to the vaccine. Both these hounds died before the fourteenth day and never received the virus.

I am tempted to subscribe this short letter, because in my opinion such articles as Mr. Wilkinson's, which give a correct record of careful *clinical* observations, are of great assistance to the profession, and that if there was a better working together, as a team, of the laboratory worker and the man in the field, many of the diseases from which our patients suffer and which we know very little about would have a different ætiology. There would not be so much empirical treatment without arriving at the cause. This is my opinion as a practitioner of over fifty-five years who always (when possible) makes a post-mortem examination when any doubt exists in my mind as to the cause of death. I have failed to discover the actual cause of death in many instances, and many times the post-mortem has not confirmed my diagnosis during life.

Whilst I see many advantages in the virus-serum method, it has its disadvantages. One of the most important, to my mind, is that a practitioner working a wide country practice single handed could not wait the hour or two hours between the inoculations ; and as so few cases are operated upon at the veterinary surgeon's own infirmary, it would be very difficult to keep the patient under careful observation for a sufficient length of time.

I think that experience has definitely proved that both the vaccine-virus and the virus-serum methods of immunisation are of much value in protecting dogs against distemper. The circumstances under which the dogs are being immunised and the observation available will help the practitioner to decide which method he should adopt.—I am, Sir, yours faithfully,

F. L. Gooch.

Veterinary Infirmary,
Stamford.

XUM

Obituary

OLUF BANG.

(DECEMBER 12TH, 1881—JULY 28TH, 1937.)

Summary of an Obituary by M. Christiansen in "Maanedsskrift for Dyrlæger," Hefte 10, August 15th, 1937.

OLUF BANG was born in 1881, and after one year of studying human medicine he turned to veterinary science. Having passed his examinations at the Veterinary School of Copenhagen in 1905, he was appointed assistant at the clinic for small domestic animals for two years, working at the same time in the bacteriological section of the laboratory of his distinguished father, Bernhard Bang, whom he succeeded as Professor of Special Pathology and Director of the Medical Clinic. His early publications included a study of tuberculosis, particularly the avian variety, to which he devoted much time and on which he published many observations. Professor Oluf Bang was a corresponding member of the Académie Vétérinaire de France, President of the Danish Biological Society, 1924–26, and from 1935 he was one of the managers of the Royal Danish Agricultural Society. He was an original personality, and it is with regret that one realises the name of Bang, which has from 1880 been one of the most distinguished in our veterinary science, is now no longer associated with the famous Copenhagen Veterinary School.

News

DOG'S ILLNESS. VETERINARY SURGEON'S CLAIM—AWARD OF £59 AT WIGTON.

AT Wigton County Court recently John M. T. McRorie, veterinary surgeon, Wigton, sued Maurice T. Monbiot, Wigton, for the recovery of £59 6*s*. 6*d*. made up as follows: To treatment of defendant's dog from July 15th, 1935, to July 30th, 1936, £28 11*s*. 6*d*.; board of dog during the period July 15th, 1935, to March 11th, 1937, at 1*s*. per day, £30 5*s*.; train fare of dog to London, 10*s*. Mr. Glynn Blackledge, barrister, instructed by Messrs. Saul and Lightfoot, was for plaintiff, and Mr. J. P. Hetherington (Messrs. J. Hetherington & Son) for the defendant.

TROUBLESOME SORT OF MANGE.

Mr. Blackledge, in opening, said that the defendant was managing director of the Wigton Rayophane Works, and lived at 21 Great Cumberland Place, London, when he was not at Wigton. He was a man of substantial position. The defendant took to the plaintiff a black cocker spaniel with a very troublesome sort of mange for treatment until it was cured. The defence, Mr. Blackledge explained, was that the defendant did not authorise any treatment and took the dog to the plaintiff to be destroyed painlessly. On the first occasion the dog was treated for thirteen weeks and returned to the defendant, who afterwards paid the fee of £7 7*s*. As the ailment recurred the dog was sent back to the plaintiff in July, 1935, with the instruction that it was to be cured if possible and only to be destroyed if it could not be cured.

His Honour recalled that when he was about thirty-five years of age he had a

cocker spaniel which suffered from the complaint which had been described by Mr. Blackledge, and he had it away at a distinguished dog veterinary surgeon again and again and again, but eventually he had to have it destroyed.

Mr. Blackledge said that there had been police court proceedings as to who was to take a licence out for the defendant's dog, and the plaintiff took out a licence without prejudice, as the dog was with him.

To Attempt to Cure the Dog.

Plaintiff gave evidence at length and bore out the statement that after the dog was returned to him in July, 1935, the defendant said : " If you think it can't be cured it had better be put down." He took it as an instruction that he had to attempt to cure it and told the defendant : " Very well, Mr. Monbiot, we will see how it goes on." Defendant came alone when he brought back the dog. At the end of June, 1936, the dog was cured, and as he received no reply from the defendant he sent it to London to Mrs. Monbiot. Later it was found tied to the gate at the works.

In cross-examination plaintiff said he was informed that it was a pedigree dog.

Mr. Hetherington : Do you know it cost £3 when it was six months old ?

Witness : No.

Plaintiff said he did not render accounts for the treatment of animals until the treatment was concluded.

His Honour said he thought that accounts should have been rendered quarterly or half-yearly. It might come as a bit of a shock to a man.

Mrs. McRorie and William Johnston, clothing-shop manager, also gave evidence for plaintiff.

The defence, outlined by Mr. Hetherington, was that, as the spaniel was suffering considerably, Mr. Monbiot considered that the best course was to have it put down, and on July 15th, accompanied by a man, Park, he took the dog to plaintiff and gave him instruction to that effect.

Plantiff said he was greatly disappointed with the result of the first treatment of the dog, and persisted that it should be destroyed. That was the last he ever saw of Mr. McRorie or the dog. He paid £3 for it ; it was not trained to the gun. Tom Park, engineer at the Rayophane works, corroborated these statements, and said he accompanied Mr. Monbiot on his visit to the veterinary surgeon.

The Judge's Finding.

His Honour said he found that the defendant's dog, " Nettles," was taken to the plaintiff for treatment with the instruction that he should treat it and try to cure it. He accepted plaintiff's story and that of his witnesses, and where it did not agree with the evidence of the defendant or his witness, Park, he accepted plaintiff's story. It would have been preferable in this case, as in others, that anyone giving treatment to an animal should render an account at least half-yearly. *Its non-rendering, however, did not invalidate the plaintiff's charges, which he considered reasonable.* There would be judgment for the amount claimed, £59 6*s*. 6*d*., and costs.

THIRTEENTH INTERNATIONAL VETERINARY CONGRESS.

Reporters Nominated by the British National Committee.

The Permanent Committee of the International Veterinary Congresses has accepted the following nominations by the British National Committee of reporters for the Thirteenth Congress to be held at Zürich-Interlaken in 1938 :—

(1) *Medicine and Surgery*.—Recent progress in hæmatology of animal diseases.—Capt. J. R. Barker, M.R.C.V.S., D.V.H., St. Peter Square, Hereford. The present status of anæsthesia.—Professor J. G. Wright, F.R.C.V.S., Royal Veterinary College, Camden Town, London, N.W.1.

XUM

(2) *Infectious Diseases.*—The value of tuberculin testing in the control of tuberculosis.—R. E. Glover, Esq., B.Sc., F.R.C.V.S., Institute of Animal Pathology, Milton Road, Cambridge.

(4) *Parasitology and Parasitic Diseases.*—Pasture hygiene in relation to parasitic diseases of man and animals.—E. L. Taylor, Esq., B.V.Sc., M.R.C.V.S., D.V.H., Ministry of Agriculture, Veterinary Laboratory, New Haw, Weybridge, Surrey.

(5) *Tropical Diseases.*—Recent research on diseases of tropical and sub-tropical countries.—R. Daubney, Esq., M.Sc., M.R.C.V.S., Chief Veterinary Research Officer, Kabete, Nairobi, Kenya Colony, East Africa.

(6) *Fowl Diseases.*—Lymphomatosis.—Professor T. Dalling, M.R.C.V.S., Institute of Animal Pathology, Milton Road, Cambridge.

(8) *Meat Inspection and Hygiene of Milk.*—Milk hygiene.—Major Brennon DeVine, M.C., F.R.C.V.S., D.V.S.M., Chief Veterinary Officer, City Veterinary Department, 7, St. Martin's Lane, Birmingham, 5.

(9) *Army Veterinary Medicine.*—Prevention of animal diseases under war-time conditions.—Jointly by Colonel A. G. Todd, C.B.E., D.S.O., M.R.C.V.S., "Amulree," Fleet, Hants, and Major A. A. Pryer, D.S.O., M.R.C.V.S.

ERADICATION OF ANIMAL DISEASES.

Under the Agriculture Act, Part IV, very important developments in respect to animal disease inspection are contemplated as the initiation of a campaign for the eradication of animal diseases in Great Britain. It is proposed by the Ministry of Agriculture to bring Part IV of the Act into operation on January 1st, 1938. For that purpose local authorities have been asked to furnish information as to the public veterinary services provided in their areas. Certain veterinary functions are to be transferred from local authorities to the Ministry. These include diagnostic inquiries into any of the animal diseases scheduled under the Diseases of Animals Acts, the whole of the administration of the Tuberculosis Order, veterinary inspection of markets when and where required, routine veterinary inspection of dairy herds, examination by a veterinary inspector of cattle on notification by a medical officer of health that tuberculosis or other disease is caused or likely to be caused by consumption of milk from the herd, and tuberculin testing and inspection of cattle under the Milk Designations Orders. Local authorities will retain important powers and duties in respect to licensing and the enforcement of Acts and the Orders of the Ministry. They will retain all their functions under the Milk and Dairies Acts and Orders and under any other enactments relating to milk, except only in relation to the inspection of animals. Their functions in relation to meat inspection will be unaffected.

Publishers' Notices

All communications should be addressed to 7 & 8, Henrietta Street, Covent Garden, London, W.C. 2. Telephone: Temple Bar 8568. Telegrams: "Baillière Phone, London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editor.

Copy of advertisements should be in the hands of the publishers—Baillière, Tindall and Cox—not later than the 25th of the month, or if proof is required, not later than the 23rd.

Binding Cases for Volume 92 and any other previous volumes can be obtained from the publishers. Price 2*s.* 9*d.* post free.

Annual Subscription, 21*s.* ($5.00 U.S.A. currency), post free.

XUM